MINING AND PETROLEUM STANDARD

AND

AMERICAN GAS-LIGHT JOURNAL.

Devoted to Mining, Petroleum, Gas, Water Supply, and Scientific Subjects Generally.

PUBLISHING OFFICE NO. 22 PINE STREET.

VOLUME IX—No. 10.
WHOLE No. 190.

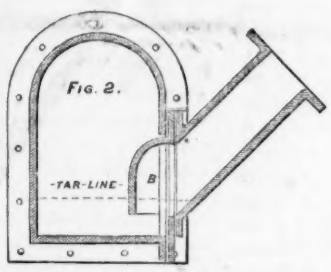
NEW YORK, SATURDAY, NOVEMBER 16, 1867.

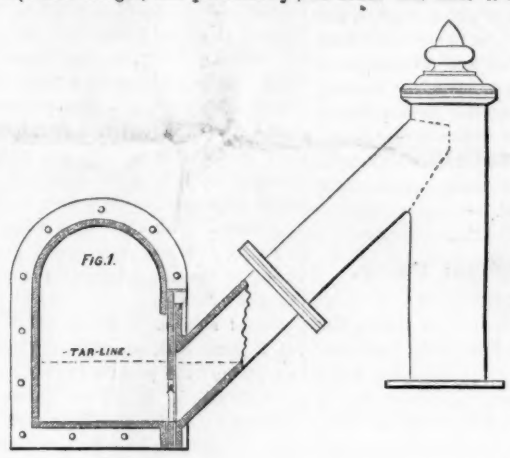
$3 PER ANNUM
IN ADVANCE.

Floyd's Adjustable Main.

EDITORS AMERICAN GAS-LIGHT JOURNAL:

Gentlemen: During the past summer, in order to meet the wishes of some of our customers, who desired to economise in the weight of castings appertaining to the setting of retorts, we devised a new arrangement for connecting the stand pipe to the hydraulic main, dispensing altogether with the dip-pipe, and diminishing the length of the bridge-pipe, by introducing the gas directly on the *face-side* instead of on the top of the main, as has always been practiced heretofore. For this improvement, and for the method of forming the hydraulic seal *within* the main, we made, some time since, application for letters patent, and probably would have deferred illustrating our invention in the columns of your journal until the patent had been issued, had we not observed in your last number that Mr. I. N. Stanley claims a similar method of *connecting* the stand pipe to the hydraulic main. Now, this may *possibly* be a coincidence, but when we state that our application for a patent was made some time before Mr. Stanley gave any publicity to this particular mode of making the connections, we will be pardoned for claiming priority of invention, and are content to await the action of the Patent Office.





The nature of our improvement will be readily understood by referring to the annexed cuts.

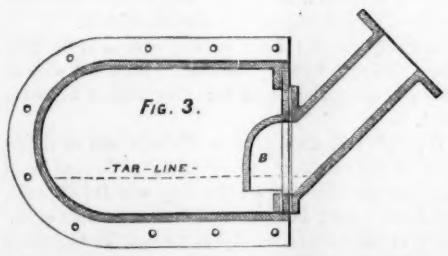
Figs. 1 and 2 show two different methods of forming the hydraulic seal. In fig. 1 the seal is formed by the division plate, A, and in fig. 2 the seal is formed by the hood, B, which is cast on the cover or division plate. This plate is secured to the front of the main by bolts and nuts, as shown, and should it be desired at any time to increase the number of retorts in the oven (say from three to five,) the main need not be disturbed further than is necessary to remove the cover, and replace it by one with the desired number of ports.

Fig. 3 shows our improvement adapted to the old style of main, which can be used by merely placing it on its side and attaching our cover.

The advantages to be gained by the use of our improvement are very easily seen by any one familiar with the matter, so that further explanations are deemed unnecessary.

In conclusion, we beg leave to state, that gas companies wishing to introduce our improved main in their works, can have their orders promptly attended to by addressing the undersigned.

HERRING & FLOYD,
738, 740, 742, 744 Greenwich street, N. Y.



FLOYD'S ADJUSTABLE MAIN.

The Properties of Iron and Steel.

Notwithstanding the diversity of opinion with regard to the action of impact and vibration upon the atomic condition of iron, and although some experiments and well attested facts go to show that such action produces no unfavorable effect upon the crystalline condition of wrought iron, there is still another class of experiments and facts which seem to point, with an equal degree of certainty, to the contrary. Bearing this in mind, the following from Professor McGauley, cannot fail to be read with interest:

"In considering the fitness of iron as a material for the construction of ships and bridges, and particularly for the latter, that one most dangerous defect to which wrought iron is liable, must be taken carefully into account, namely, its tendency to crystallize, and thus to lose a very large portion of its strength.

"It appears from Mr. Fairbairn's experiments, that with constant changes of load, or with the same load, but with constant disturbance of the metallic molecules from vibration, fracture will, in time, certainly ensue of itself.

"It has been ascertained that an iron girder will break with about 400,000 changes of load, accompanied by vibrations; a fact which but too clearly shows that the spontaneous destruction of our iron bridges is but a question of time, and not even of a very long one.

"The explanations of this very alarming fact, the danger from which is, unfortunately, not even confined to bridges, but extends to the axles of locomotives and carriages, and to the various portions of machinery, which from time to time so unexpectedly give way, is found in the restoration to their primitive forms of the crystals which had been elongated and mutually entangled by the hammering to which the iron is subjected during its manufacture.

"It might be supposed that steel, from its tensile strength being so much greater than that of iron, would be, in every instance, far preferable to iron. Such, however, is not the case. If, for example, steel is used in the formation of a girder, its thickness may be much less than if iron were used. But this very circumstance, as it is almost equally liable to oxydation, causes its strength to be impaired with much greater rapidity.

"Thus, a plate of iron half an inch thick is much less weakened by oxydation to the depth of the sixteenth of an inch than a plate of steel, which at first is only a quarter of an inch thick. In the one case, the strength of the plate is diminished only to the extent of one-eighth; in the other, with the same amount of oxydation, to the extent of one-fourth. In the former case the plate would stand, while in the latter it would be sure to give way.

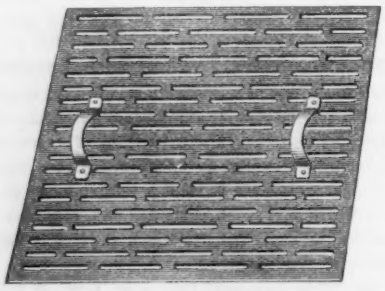
"Again, it might be supposed that steel would answer best where violent concussions are to be withstood and that, therefore, it would be an excellent material for armor plates. The reverse is, however, true. Steel is strong only when exposed to a force that is slowly applied. A cannon ball which would cause only indentations in iron, or at the worst only pass through it, would dash a plate of steel to pieces, dealing destruction most probably, to all those in the vicinity."—*Min. and Scientific Press.*

DISTILLATION OF PETROLEUM OILS.—It is said that Mr. H. B. Tweedles, of Pittsburg, Pa., has invented and patented a new process for the distillation of petroleum oils, in which steam is the only heating agent employed. It is furthermore claimed that the oil so produced is obtained in such a state as to avoid the necessity and expense of any subsequent purification by alkalies and acids. But six or eight minutes only are said to be employed in accomplishing the result. The quantity operated upon in a six or eight minutes run is not stated. Steam is undoubtedly to become a most important auxiliary in the distillation and purification of petroleum; numerous experiments in that direction have already been undertaken in California, with a greater or less measure of success.

Arnold's Metallic Purifying Tray.

One of the most important operations in the manufacture of illuminating gas, consists in freeing it from the impurities which all coal gas contains when it leaves the retorts.

These impurities consist of the vapors of ammonia, carbonic acid gas, and the various compounds of sulphur, etc., any or all of which if left in the gas are more or less detrimental to its illuminating power; besides being destructive to furniture, paintings, gildings and the like, and injurious to the health; but the noxious and disagreeable odor of unpurified gas is of itself sufficient to render unnecessary any further argument of the importance and necessity to have pure gas. The value of any improvement in the apparatus or process of purifying gas is best known by gas manufacturers.



The accompanying engraving gives a clear idea of an improvement in Purifying Trays, wherein the cost and inconvenience of using wooden or unprotected metallic trays, which the corrosive action of gas so soon destroys, the inventor asserts is completely overcome. The tray represented is a sheet iron plate, perforated with slots as represented, or in any other form, and with handles attached, as shown. The nature of this invention consists in "galvanizing," or covering the tray with zinc or tin, whereby it is protected from corrosion.

T. G. Arnold, 336 and 338 West 21st street, is the inventor and manufacturer of these trays, of whom further information can be obtained.

Cornell & Pease Steam Pump.

The accompanying engraving represents a new steam pump of upright form, manufactured by Messrs. Cornell & Pease, of 42 Dey street, New York, for feeding boilers and for other purposes, which is exceedingly simple; the steam cylinder being above the pump, and valve chest on top, with slide valve worked directly from the crank shaft which passes through the valve chest.

This pump is so simple in the arrangement of its parts that it is not liable to get out of order, and the parts are so few that it will commend itself on account of its remarkable cheapness, aside from its other good qualities. For pumping the feed water into steam boilers and the other purposes of gas works, its inventor considers it is well adapted, as well as for the various other places where pumps are required. One of these pumps is now being placed in the gas works at Yonkers.

A Prussian Railway Carriage at the Paris Exhibition.—In the Prussian department a first and second class railway carriage, made at Berlin, is exhibited, which has many novelties and conveniences worthy the attention of our own railway authorities. The carriage accommodates six first-class and sixteen second-class passengers; the first-class compartment has a separate retiring-room with lavatory, and the seats can be made into comfortable beds. Each second-class compartment has a retiring room. Instead of hot water vessels under the feet, vessels of heated sand are fixed under the seats. The lighting is brought near the passengers for reading. There is a passage for the guard through the carriage, and footboards at both ends of the carriage communicating with the next. The price is between $2,000 and $2,500 per carriage.

Chemical Products from the Distillation of Peat.

[From "Facts About Peat." by T. H. Leavitt.]

(Concluded.)

An article in the "Annual of Scientific Discovery," for 1851, relating to improvements in treating peat in England, says, "In addition to gas and ammonia, there is also obtained from the distillation of peat a peculiar acid, and a bitumino-adipose compound, which is called 'paranaphthadipose.' One of the products of this is a good solvent of gutta-percha, caoutchouc," &c.

The crude residues from the rectification of the oils of peat and bitumen, if burned in proper apparatus, furnish abundance of lampblack.

A writer in the "London Journal of Arts," for December, 1855, states that the peat-charcoal which is left in the retorts, after all the volatile constituents of peat have been distilled away, possess the property of depriving colored vegetable solutions of the whole of their coloring matters. He adds that twenty-five per cent more of this charcoal is needed than of bone-black; but the latter is about six times as expensive. Before using the peat-charcoal, it must be purified from iron, and sulphate of lime, and all alkaline matters.

In 1854 a company was formed, called the Irish Peat Company, having a factory near Athy, in Kildare, Ireand; its purpose being, to produce, from peat, tar, paraffine, oil, naphtha, sulphate of ammonia, and to manufacture iron, the furnaces being heated with the gas manufactured or produced from the peat. It was under the general management and superintendence of Dr. Sullivan. The peat was distilled in furnaces, like the ordinary blast furnaces, thirty-two feet seven inches high, made perfectly tight by being incased in boiler plate iron, and covered at the top with a close conical valve and a double hopper. Air was blown in, in limited quantity, through three tuyeres at the base. The volatile products were taken off at the top by two twelve-inch pipes, and conveyed into a hydraulic main three feet in diameter, from which the tar and other liquids flow into a tank, and the gases and vapors through series of condensing and purifying pipes and other apparatus, in which their separation is effectually completed. The charcoal is entirely consumed in the furnace. Various experiments gave great encouragement to the company, and the projectors, who were men of considerable standing and eminence, were sanguine of success. They started their works, however, at immense cost, and with the intention of producing *everything* from peat, in paying quantities, and consequently failed. It was well known, moreover, that the original outlay for building, machinery, etc., was enormous (something like $300,000), and the peat operated upon was of an inferior quality; the result of the enterprise, therefore, is no criterion for the commercial results of a prudently managed establishment.

Probably one of the reasons why several of the peat enterprises which have been started have met with so little real success has been that they wanted to do *too much*.

If people will undertake to obtain in one establishment *all* the products capable of being derived from peat, the probabilities are that they will fail of profit, and make a loss; but an establishment devoted exclusively to the preparation of peat for fuel, leaving others to char or distil it, will probably succeed commercially.

Mr. B. H. Paul read to the British Association, in 1863, a paper "On the Manufacture of Hydro-carbon Oils, Paraffine, etc., from Peat."

The author described the results which had been obtained at some works erected under his direction at Stornway, on the Island of Lewes.

The peat from that locality was described as a peculiarly rich bituminous variety of mountain peat, yielding from five to ten gallons of refined oils and paraffine from the ton. The results obtained at these works were contrasted with those obtained at the works of the Irish Peat Company, where the product of oil was not more than two gallons per ton. This difference in the produce was ascribed, in a great degree, to the improper mode of working adopted at the Irish.

One of the most important points dwelt upon was the necessity of regarding the hydro carbon oils and the parrffine as the only products that would afford a profit in the distillation of peat. Dr. Paul concluded his paper by expressing his opinion that, though the working of peat was surrounded by many serious difficulties, there was every reason to believe that such peat as that occurring in the Highlands of Scotland could be advantageously worked; and that, if the manufacture of oils were undertaken with earnestness and perseverance, it would become the means of greatly improving the conditiun of those parts of the country, and a fertile source of profit.

In a recent conversation with a gentleman of this city, a native of Germany, he gave a very interesting account of a large peat establishment near his father's residence, "as large," he remarked, "as Chickering's Factory," where the products above mentioned are produced on an extensive scale, yielding, according to his statements, large profits to the proprietors of the works. He mentioned also another production realized at these works, of which we have nowhere seen mention in connection with peat. We allude to *aniline colors*, which he states are there produced from peat, though in very small quantities; but, owing to their exceeding richness and strength, are sold "so many drops so many dollars," which, being interpreted, means one dollar per drop. The finest candles used in the Catholic service in that country are manufactured from paraffine extracted from peat.

Indestructible Railway Sleepers.

Numerous attempts have been made to render the timber sleepers on railways more durable by enabling them to resist the destructive action of damp and moisture. Experience has shown, however, that the results produced have not been proportionate to the extra cost incurred. The average length of prepared sleepers has been found to be about five years, or, considering the additional cost, showing but a slight increase of longevity over the timber in its natural state. Some of our railway managers have accordingly decided upon abandoning the use of prepared sleepers on their lines. A process of indurating has, however, been brought under our notice during the last week which promises results of a most satisfactory character, and which is well deserving the attention of managers of our railways. The inventor of the process is Col. Szerelemy, whose name is well known in connection with the preservation of portions of the stone of the new Houses of Parliament. The material employed possesses, we are informed, qualities in many respects identical with that which has so remarkable an effect upon the surfaces of stone. Applied to timber, the preservative effects are very remarkable, as instanced in the specimens submitted to the inspection of a number of scientific gentlemen last week. They were treated by the process in 1851, and were shown in the exhibition of that year. Like many other germs of great inventions which were passed over unnoticed at that time, these prepared sleepers did not attract the attention which they deserved. Besides, being but newly treated, the inventor, though perfectly convinced of the completeness of the induration which he had effected, could not appeal to that test of experience which is considered alone sufficient to satisfy the minds of practical men. When the sleepers were removed from the exhibition building they were buried in the ground, and, if not wholly forgotten, they have been, at least, undisturbed, until the recurrence of the exhibition at Paris has directed anew the attention of Col. Szerelemy to the existence of those sleepers of sixteen years ago. The timbers were accordingly unearthed, and to the surprise of many, though certainly not of the inventor himself, the timber is as sound as on the day when it first came into his hand. The sleepers thus prepared are on view at the Albion Iron Works, Battersea, and managers of railways and of other public works, who really desire to keep down working expenses, would do well to pay a visit to the place, and ascertain for themselves the value of this mode of treatment. We believe that some astute Americans, who have profited by their visit to the Paris exhibition, have within the last week purchased the rights of the inventor for the United States.—*London Railway News.*

Advantages of Gas.

[From "Clegg on the Manufacture of Coal Gas."]

(Concluded from page 114.)

Several plans have been adopted for giving to a gas stove the glowing heat and cheerful appearance of a blazing coal fire. Thus, when a grate is fitted with perforated bars, and connected by a service-pipe, is filled with any incombustible pórous substances, they quickly become red hot, and present a good imitation of an open coal fire. Such fires cannot, indeed, come into general use whilst the relative prices of coal and gas remain as at present, but there are many circumstances in which they may be adopted with advantage, and their convenience, in being instantly lighted without any trouble, makes them very desirable as stoves for occasional use.

Great as are the advantages of gas when applied to illuminating shops and dwellings, they are still more conspicuous when it is applied to lighting street lamps. By no other practicable means can towns be so effectually and economically lighted as by coal gas, and its introduction is generally admitted to have materially diminished public crimes and offences, as well as to have afforded great convenience to the inhabitants. The public and private advantages of gas lighting are, indeed, so manifest and so generally acknowleged, that it seems strange there should be any town in the kingdom in which it is not adopted. A small town cannot be supplied with gas at so cheap a rate as a large one, because the cost of the apparatus, the labor, and the wear and tear, will be much greater in proportion; nevertheless, a town of only 200 consumers may be lighted with gas at a cost less than that which the inhabitants pay for oil and candles. A few figures will show this. Let the cheapest oil lamp be taken as a datum, viz., the solar lamp, burning fish oil. One of these, kept perfectly in order, will yield a light equal to about five mould candles of six to the pound; and presuming the light to be required for four hours every night during the year, or for 1460 hours, it would burn about 15½ gallons of oil, which, at 4*s.* per gallon, would be equal to £3. 3*s.* per year. An Argand gas burner, consuming 3.25 cubic feet per hour, would also give a light equal to five mould candles, and would consume, during 1460 hours, 4743 cubic feet, and allowing interest for the fittings and meter, gas at 10*s.* per 1,000 would be cheaper than candles; and how much more safe, cleanly and convenient need not be pointed out. But this mode of estimating the comparative cost of gas does not represent it to the best advantage. When more than one oil lamp is required, as in a shop-window, the saving by burning gas would be much greater, for a sixteen-hole Argand gas burner, consuming five feet of ordinary gas per hour, gives a light equal to thirteen candles, the equivalent of which in oil for the year would be forty gallons, costing £8.

At the price of 10*s.* per 1,000 feet, 200 burners would yield £455 per gross rental, and presuming the cost of production and distribution to amount to 5*s.* per 1,000 (which is extreme) the interest would be more than 10 per cent. on the capital expended for a very straggling town.

The outlay in the first instance, the labor required for the operation, the quantity of coals and material expended, together with the returns, are now so fully understood, and can be calculated to such a nicety that money sunk in the erection of gas-works returns its interest with nearly the same certainty as that deposited in the funds. It is not a speculation, but a matter of the same kind as the commencement of a factory for the production of any other article of commerce.

While thus speaking of the certainty of success attending the manufacture of coal gas, it is on the understanding that the apparatus erected for that purpose is designed and executed with skill. Individuals from observing the excellent returns given for the capital expended on such establishments, have been induced to erect works of their own, expecting an equal remuneration; but from employing ignorant people, their arrangements have in many cases signally failed, and these circumstances have no doubt tended in a great measure to retard the general diffusion of gas-illumination throughout the kingdom.

It is only these works in the erection of which incompetent people have been employed, that fail to answer the expectations of the capitalist. It is at all times unpleasant to find fault; but it cannot be denied that there are many who, from slight or no experience at all, fancy themselves capable of undertaking the superintendence of any gas establishment; the number of failures constantly point out their ignorance. It is no better than Imposition for unqualified persons to undertake the arrangement of such machinery, upon the correct working of which must depend their success; and those who suffer themselves thus to be imposed upon often find out their error when it is too late to rectify it.

The manufacture of gas is one of those processes which appear simple and straightforward at first sight, and this may in some measure account for the errors that are committed. It is true that the operations do appear exceedingly plain; but there are few that require more scientific judgment, system, and strict care. The retorts, for instance, must be set in such a manner as to be heated sufficiently with the smallest quantity of fuel, and without the liability of being made too hot; they must be carefully watched, lest the incrustation of carbon in the interior accumulate more than is absolutely unavoidable, and lest they burn out before the time calculated. These particulars can only be learned by practice; they will vary with every varying quality of coal, and be affected by the size and shape of the distillatory vessel itself. It also requires much experience to determine the most economical arrangements for the condensers, purifiers, etc., and to regulate the quantity of gas to the demand. But, above all, the proper distribution of the street-mains requires the most skill, the importance of which will be pointed out in the section treating on that subject.

The supplying of light to street or parish lamps alone can never be undertaken with economy in any district, the most beneficial application of gas being in those situations where a large quantity of light is wanted in a small space. Where the light is required to be more diffused, the profit is less, owing to the greater extent of service-pipes and fittings.

The History of Illuminating Gas.

[Continued from page 131.]

In 1801, Mr. Watt, going over to Paris, wrote back in alarm to Soho to tell them for Heaven's sake, if they intended to do anything with Murdoch's light, to do it at once, as a Frenchman, named Le Bon, had obtained gas by distilling wood, had lit up his own house and garden, and now proposed to light the whole city of Paris. In 1803, while the invention still laid almost unknown beyond the Soho foundries, a Mr. Winsor, a German, who had Anglicized his name from Winzer, arrived from Paris and publicly announced himself as the discoverer and inventor of gas-lighting. He was an ignorant, boastful man, but confident, industrious and persevering. It was supposed he had been one of Le Bon's assistants, and having stolen the Promethean secret, had taken French leave of his patron.

He knew little of chemistry, and was so ignorant of mechanics that he could scarcely conduct the erection of his own apparatus. With a noisy charlatanism that annoyed people of sense, this German asserted the grandeur of its discovery, its immense usefulness, and its vast pecuniary value. The adventurer at once obtained a hold over the mind of a retired coach-maker, named Kenzie, who lived in Green street, near Hyde Park, and this patron lent this Dousterswivel his premises for gas-works. The extraordinary advantages of the new light could not be concealed or denied, and in May, 1804, Mr. Winsor obtained a patent through the influence of his friends. In 1803–4, he first exhibited his plan of illumination at the Lyceum Theatre, then a great resort for lecturers and painters of panaramas. He showed the manner of making the gas, and conveying it around and up and down a house; he also explained how the form of the flame could be modified by the shape of the burner—that its intense flame would not be extinguished by strong and sudden gusts of wind, and that it would neither produce smoke, nor scatter dangerous sparks.

In the mean time contemporaneous and more genuine discoverers were also working. In 1802, Mr. (afterwards Dr.) Henry, lecturer at Manchester, explained how gas was produced, and exhibited gas burning in an Argand lamp, on Mr. Murdoch's plan. He succeeded in obtaining gas from wood, peat, oil and wax as easily as from coal, and made numerous careful experiments as to the relative value of of coal as a light-producing power. He also especially studied the various means by which it could best be purified.

In 1806, Mr. Josiah Pemberton, an intelligent and ingenious man, exhibited various forms of gas lights in front of his manufactory at Birmingham, and was the first to construct gas stoves for the soldering required in the button factories; the toy factories also soon learned the value of the new power.

In 1807 (August 16), a few gentleman, including the politically celebrated Alderman Wood, lit with gas the Golden Lane Brewery, and a part of Beech street and Whitecross street. The progress of even the rudest street lighting had not been rapid in London. In 1417 (Henry the Fifth), Sir Henry Barton, mayor of London, required every citizen to hang out a lantern after dark from Hallowtide to Candlemas. Paris was not lighted till 1525 (Henry the Eighth). In 1690 (William the Third), a special order was issued in London for citizens to hang out lanterns or lamps from Michaelmas to Christmas. In 1716 (George the First), housekeepers were again enjoined by an act of the Common Council to hang out lights every dark night from six to eleven o'clock, under pain of a penalty of one shilling. In 1736 (George the Second), the city applied to Parliament for an act to enable them to erect street lamps, and in 1744, the year before Colloden, they obtained further power for lighting the city. The admirable way in which they complacently performed their civilizing task may be seen in Hogarth's picture of the "Arrest of the Rake," in St. James' street—a slovenly ragged, tipsy-looking lad is on an awkward ladder, filling a clumsy street lamp with fish oil, which he is ruthlessly slopping over on the richly powdered head of a dandy beneath. As early as 1733 the vigorous town of Birmingham was lit by street lamps, while London, less progressive and more conservative, remained three years later wilfully shutting her eyes to the necessity.

In the mean time Winsor went on confident of success, gradually teaching himself the secrets of his own subject. January 28, 1807, the strenuous German removed his exhibition to Pall Mall, and there lighted up a part of the street, to the astonishment of the dandies. Gas was sneered at as offensive, dangerous, expensive, and unmanageable. Winsor was the butt of the day, but he held firm, projected a National Heat and Light Company, and flung out pamphlets to flutter through the streets and spread abroad his sanguine hopes.

In 1808, Mr. Murdoch, the real genius of the discovery, read a paper to the Royal Society, clear, truthful and simple, to show how largely gas had been used in a certain extensive factory (Messrs. Phillips & Lee) at Manchester. For this useful paper, Mr. Murdoch received Count Rumford's gold medal. The first great practical success of gas was here related, and soon became popularly known.

Mr. Murdoch said: "The whole of the rooms of the cotton mill of Mr. Lee, at Manchester, which is, I believe, the most extensive in the United Kingdom, as well as its counting houses and store rooms and the adjacent dwelling-house of Mr. Lee, are lighted with gas from coal. The total quantity of light used during the hours of burning has been ascertained, by a comparison of shadows, to be about equal to the light which two thousand five hundred mould candles, of six to the pound, would give. each of the candles with which the comparison was made consuming four-tenths of an ounce (one hundred and seventy-five grains) of tallow per hour. The burners were of the Argand and cockspur kind. The number used was nine hundred and twenty-four, requiring an hourly supply of one thousand two hundred and fifty cubic feet of cannel coal gas.

(To be continued.)

Correspondence.

Important to Gas Men.

Messrs. Editors: The Rev. M. P. Gaddis, Jr., in a sermon recently delivered before the Convention of the Brotherhood of Locomotive Engineers, held at Cincinnati, used the following language:

"If merchants need their chambers of commerce and boards of trade; ministers their conferences and synods; physicians their medical societies; political parties their clubs and regular organizations; temperance men their temples and divisions; then do locomotive engineers need a brotherhood like this, in which all of similar tastes, mechanically and intellectually, can meet together."

This train of thought caused the inquiry to rise in our minds, why do not gas engineers and superintendents of gas-works hold a convention, at some central point, where all could assemble and organize an association to meet annually, for their mutual advantage?

This is no new thing; in England, and we judge elsewhere, we read of such meetings being frequently held, to hear interesting and valuable lectures on the various highly important matters which *should* claim the attention of every gas engineer and superintendent.

The various mooted points in regard to clay and iron retorts; the adaptibility of clay retorts as well to small as large works; the best methods of removing the accumulation of carbon without injury to the retorts stopping leaks, etc., could be discussed; the comparison of the percentage of yield; proportions of coke used in carbonization; relative length of time retorts will last; quality of the gas produced under photometric test between clay and iron retorts; also whether, as tar is becoming so valuable a product of gas-works and coke so desirable a substitute for the dirty bituminous coals as a fuel, it would not be better to use iron retorts, as the yield of these residuums is more abundant in the one case than the other.

Again, the questions whether the practical advantage of naphtha and other hydrocarbons applied between the company and the consumer are important; whether the passage of steam over carbon, thereby generating hydrogen gas, which could be separately used for the purposes of heating, or injected into the retorts in which coals are being carbonized, thereby supplying material for the surplus olefiant gas to enter into combination therewith, thus producing a largely increased yield of carburetted hydrogen from the same weight of coals, instead of depositing (as is claimed) the excess of olefiant gas on the retorts in the shape of carbon, would be a matter for deliberation.

Other subjects for consideration would be to determine by scientific investigation, the simplest and most effective plan for setting retorts, whereby the greatest amount of heat, with the least consumption of fuel, to produce *certain* results from a given quantity of coals, could be reached; the best means of detecting impurities in gas; the mode of applying the various tests; the best methods and apparatus for washing and condensing gas; the necessity of an exhauster when using clay retorts, in small as in large works, etc., etc.

Questions in regard to coals—from whence the best can be obtained, their quality and yield with a variety of other interesting subjects which could be presented for consideration, and would arouse inquiries which prove of incalculable advantage and would raise the profession to a high point of excellence in practical and scientific knowledge.

At the annual meetings the different manufacturers of meters and other requisite machinery for gas-works, could have samples of their machines on exhibition, showing the exactness of their operations; the mechanical and scientific skill required for their construction; specimens of the quality of the materials of which they are made, and demonstrating by actual test which meter would, under the lowest pressure, accurately register the smallest amount of gas passing through in a given time.

A few weeks ago we took occasion to visit some of our neighboring gas engineers and superintendents, when the reciprocal pleasure each experienced in the society of the other, the hearty good will expressed, the willingness to impart all desired information, produced such an agreeable feeling of satisfaction, that we have no doubt that such a meeting as that suggested would be heartily responded to, result in much good to all concerned, and be of immense advantage to the profession, as well as to the gas companies with which they are severally connected.

To present the matter to the consideration of the profession, we would suggest that such a convention be held in the city of Cincinnati in the middle of April, May or June of next year. That is a period when, as a general thing, gas-works are over their serious work, when plans and arrangements are being perfected for the needed enlargements and changes, required before another season of heavy work.

We have no doubt Pres. Miller and his coadjutors would cheerfully do the honors and make the necessary preparations for such a meeting, the need of which he has seriously felt, in the many unjust and unfounded attacks he has been subjected to in the few past years.

R.

"New Feature in Gasometers."

Editors American Gas-Light Journal:

Messrs. Editors: In your last number (2d inst.) you have an article headed "New Feature in Gasometers," which "new feature" proves to be a peculiar method of suspending the inner section of a gasholder.

May I be permitted to suggest that when a holder is properly constructed, the suspending the inner section is entirely unnecessary; the practice has long since been abandoned by most constructors of gasholders. Were it not for the purpose of *counterweighting* the *outer* section, no suspending of the latter would be necessary for the proper working of a well-balanced gasholder.

*

Coal Bricks.

A brick machine, capable of making bricks not only of clay but of coal dust, concreted with a patent composition, has been invented by Mr. George Arnott, of Gloucester, who thus describes the machinery, for which he has received protection from the Patent Office:

"I have a pug-mill erected, with a large screw running down the centre, and to each side of the pug mill are fastened strong steel plates, which pass through the arms of the screw, so that when either coal or clay is passed into the top, it is ground and thoroughly well mixed before reaching the bottom, when it fills a double row of square iron moulds or frames, which are endless, being hinged together, and which rows of moulds pass over two square tumblers (one at each end of the machine), which tumblers are worked by means of an iron rod from the main shaft and a ratchet-wheel, and at every revolution of the main shaft the rod takes hold of one of the notches in the ratchet-wheel, drags two boxes or moulds out of the pug-mill, passes them under the iron plungers or pressers next to the mill, where they are pressed and marked with the trade mark, etc.; and at the same time the next two plungers beyond pass two complete bricks through the bottom of the machine on an endless band running the cross or contrary way to the piler or man who takes them off, so that at every revolution of the main shaft either two coal or clay pressed bricks are made. At the low rate of sixty revolutions per minute, one of these machines would make 7,200 per hour. All the labor they require is one man to feed and another to take away."

The Uskside Engineering Company, of Newport, Monmouthshire, it seems, have nearly completed one of these machines for the Compressed Coal Company, whose extensive new works are situated at Whitecroft, near Lydney, Gloucestershire, formed for the purpose of using up the heretofore worthless small coal thrown up from the pits in the Forest of Dean. The coal-bricks after coming from the mill are soaked in a rock-oil, and afterwards water-proofed: so that whenever a fire is needed either for house or other purposes, all that has to be done is to break one of the bricks, place it in the grate or elsewhere, and set light to it. The cost, we are informed, will be considerably below the price now charged for ordinary coals.—*Builder.*

Necessity for Further Methods of Converting Steel,

It has been already shown in *The Ironmonger* that the attention of ironmasters in South Staffordshire has been recently directed to the process invented by Mr. Heaton, of the Langley Mills, Nottingham, for purifying pig iron, and converting it into a kind of steel. The following is a further description of the process:

"The mode of procedure is to place from seven to nine pounds of nitrate of soda in a movable bottom, which, with a perforated iron plate over the salt, is clamped to a cylindrical converter lined with fire bricks, and having an upright funnel to carry off the products of combustion. A charge of about fourteen hundred weight is run into this converter from a cupola. Rapid combustion takes place for about two minutes and a half. At first ruddy fumes, arising from the decomposed nitrate, are given off. The flame then becomes bluish, and finally dark colored, after which a series of sharp explosions followed in rapid succession, and brilliant sparks are given off, something similar to the scintillations observable in the Bessemer process. When the action has subsided, the molten metal is run into ingots."

It is said that a substance closely resembling steel has been made by this process, but the experiments do not seem to have been yet conducted with that systematic accuracy which is desirable before the results can be relied on unhesitatingly. The trade will await with interest the further experiments in progress, and also the publication of analyses showing the nature of the products obtained by this chemical process. Already several Staffordshire firms have taken up the matter, and are said to be satisfied of the value of the process. They intend to apply it specially to the purification of the cinder iron produced extensively there.

The growing necessity for the production of steel in large quantities, to serve many purposes hitherto fulfilled only by iron, is occasioning a call for a converting process, which does not entail the very heavy cost incident to the adoption of the Bessemer principle. *Apropos* of said cost, we may instance the experience of the Mersey Steel and Ironworks Company of Liverpool. Their balance sheet of the trading of the concern during the year just terminated, shows an aggregate loss of considerably over £14,000 upon a capital of upwards of £320,000. Of that capital £47,595 has been spent upon land, premises and machinery for carrying on the Bessemer process; and the year's "royalty on Bessemer steel" has been a further sum of £4,881.—*The Ironmonger.*

Useful Recipes.

To Mend Amber Mouth-Pieces, etc.—Smear the surface of the broken pieces with boiled linseed oil, and hold them over the mild heat of a charcoal fire, pressing the parts well together, till the lute becomes hard and solid. A knowledge of this secret might save the pocket of the "knight of the meerschaum" enough to keep him in tobacco a month.

Alum Whey, in Diarrhœa.—To one pint of fresh milk, add one-fourth of an ounce of powdered alum. Heat the mixture until it boils, and strain it. In common cases of the above complaint it is employed in doses of a wine glass full for an adult three times a day. In the country, it is sometimes inconvenient to call the services of a physician, and in such cases similar remedies may very properly be employed.

To Loosen a Rusty Screw.—If you have a screw rusted into wood, or a nut or bolt that will not readily turn, pour on a little kerosene oil and let it remain. In a little while it will penetrate the interstices, so that the screw may be easily started.

Printing on Leather.—Leather being more or less a porous substance, it consequently absorbs the ink, and necessitates a coating which hardens the surface, without changing the color or altering the quality of the leather. To secure this, a slight brushing in of gum arabic or white of egg, which is to be left undisturbed for some hours, to enable the coating to dry thoroughly, is recommended. On the surface thus prepared, printing ink will stand as well as on paper

To Bleach Petroleum.—Petroleum is bleached by shaking it successively and repeatedly with oil of vitriol, and then with strong solution of caustic soda, allowing the oil to separate each time. A subsequent distillation is also necessary.

Rust Removed from Metals.—Plunge the blade in a bath of diluted hydrochloric (muriatic) acid; say one pint of the acid to one quart of water. Leave it there for twenty-four hours; then take it out and rub well with a scrubbing-brush. The oxide will come off like dirt under the action of soap. Should any still remain, as is likely, in the corroded parts, return the blade to the bath for a few hours more, and repeat the scrubbing. The blade will then present the appearance of dull lead. It must then be well washed in plain water several times, and thoroughly dried before a fire. Lastly, a little rubbing with oil and fine emery powder will restore the polish. Should oil or grease have mingled with the rust, as is usually the case, it will be necessary to remove it by a hot solution of soda before submitting the metal to the acid. This last attacks the rust alone, without injuring the steel: but the washing in plain water is all important, as, after the process, the metal will absorb oxygen from the atmosphere freely, if any trace of the acid be allowed to remain.

The Departure of the Swallow.

And is the swallow gone?
Who beheld it?
Which way sailed it?
Farewell bade it none?

No mortal saw it go;
But who doth hear
Its summer cheer
As it flitteth to and fro?

So the freed spirit flies!
From its surrounding clay
It steals away,
Like the swallow from the skies.

Whither? wherefore doth it go?
'Tis all unknown;
We feel alone,
That a void is left below.

MISCELLANY.

The Cathedral of Seville, Spain, and the Curious Dance Performed on Corpus Christi.

Seville is situated in a flat country, with nothing remarkably pretty or attractive about it, on the banks of a narrow river with anything but a "crystal bosom," on which there are some barges and a small steamer sending out volumes of smoke. Its streets are badly paved, and the roads in the environs are almost impassable after rain.

From the tower of St. Mark's, at Venice, the view is somewhat similar, but there is nothing here to compare with the "*Canale Grande*," and the broad lagunes; and we cannot, in whatever direction we look, discern much that is imposing, either in the situation or buildings of Seville.

If in the twelfth century it was one of the most considerable cities in Spain, it is still the most favored spot; the fertility of the soil and the beauty of the climate rendering it at all times a desirable residence.

The capital of a province, with a population in 1861 of about one hundred and eighteen thousand, it is a town of great importance; and when we have visited its people, we shall, perhaps, alter our tone a little, and acknowledge the truth of the Spanish proverb, "*Quien non ha vista a Sevilla, no ha vista a maravilla.*"

It has been said, "There is not a more solemn and beautiful temple in the world than the great cathedral at Seville." We approached it for the first time through the Patio de los Naranjos, "the Court of Orange Trees," the largest portion remaining of the old mosque, on the site of which the present building was erected. Such enclosures, shutting out with their high walls the sounds and sights of the outer world, and solemnizing the mind ere the house of God is actually entered, appear to have been usually attached to Moorish places of worship.

The original fountain, surrounded by rows of fruit-laden orange trees, still occupies the centre of the court, and at the northeast corner rises one of the most beautiful towers of Europe; the far-famed Giralda, the landmark and ornament of Seville, and the first object the eye rests on as you traverse the plain that encircles the city.

As it came forth in the freshness of its original beauty from the hands of Moorish builders, few constructions could have more perfectly united the gracefulness of a minaret with the solid firmness of a tower, its elevation of one hundred and eighty-five feet being relieved throughout by windows of extreme elegance, and enriched with paneling of shallow arcades and tracery of varied pattern, without sacrificing in any degree the impression of strength and solidity.

Passing through a narrow corridor terminated by an old horse-shoe arch, you emerge into the solemn gloom that vails the interior of the grandest ecclesiastical building in Spain. The effect is overwhelming. The sudden transition from the bright sunshine of the outer air produces a sensation of darkness; all is confused and indistinct, while the eye, instinctively seeking relief looks upward to the clearstory, where, through windows few and small, a feeble ray of daylight comes struggling in. By degrees the magnificent proportions of the building reveal themselves, and the awe-struck sense of majesty and grandeur almost oppresses the mind.

The feast of Corpus Christi, or Corpus, as it is called more simply in Spain, attracts thousands to the venerable pile.

The day of the Octave offers a singular original ceremony, seen nowhere but in this church, "The Dance of the Six," performed at vespers by the choir boys. Although still called "The Dance of the Six," the performers are now ten in number, selected from the youngest choristers. They keep time with their castanets, and chant an ancient hymn.

The ceremony cannot date beyond the middle ages, still it is quite ancient. As far back as 1439 Pope Eugene the Fourth issued, at Florence, a bull in regard to these choir boys. Julius the Third another in 1554. One Archbishop of Seville, disapproving the ceremony, wished to abolish it, but the Chapter of the Cathedral equipped a vessel, on which they dispatched the choristers and chapel-master to Rome. Here they executed their dance in presence of Pope Innocent the Eleventh, who, finding nothing censurable, gave the promptest decision in the history of Roman appeals. In 1690, they were invited to Rome and again went to perform their ancient religous dance. This last relic of the use of dancing in Christian worship is described as grave and dignified by Gestére, a recent French writer, and Lady Herbert, of Lea, styles it "a dance so solemn, so suggestive, and so peculiar, that no one who has witnessed it can speak of it without emotion."

Sunrise in Calcutta.

Calcutta at early dawn presents a strange spectacle, especially in the suburbs, where the old narrow streets prevail, and the tall structures of brick and stone are mingled with hovels of mud and bamboo. The rich native merchant does not, like the Englishman, take a fine, airy, salubrious site for his dwelling. The surroundings are to him a matter of indifference. He escapes the din of the thoroughfare however, for great men's houses in Eastern cities usually turn their backs upon the public thoroughfare, that home of the many. Where stores line the streets, the shopkeepers, generally fruiterers, confectioners, druggists and cloth-dealers, close their shops at nightfall and go elsewhere, making the ground-floor perfectly dark. At night these streets are lighted by floating lights set in large pans of oil by the roadside and by colored Chineselike lamps. The smell is terrible, and is increased by the odor of the people, who might well assume the name given by our people to the lower classes in Central America, Greasers, for they really grease themselves with this oil.

The street is to many a home, and as night advances many stretch themselves on the pavement to gain a scanty repose, or what is worse, sit up all night singing "La! la! la!" at the top of their voices. As morning comes the lamps and cries die out, the dull, smoky smell becomes more intense as the sun approaches the horizon, and when at last he lifts his head above it for the adoration of the Parsee, the street population of Calcutta rouse them from their lairs, a ragged, squalid, crowd, such as only Eastern cities possess. It is less ragged perhaps than it would be had its members more clothes; in the majority of cases, the garment is confined to the neighborhood of the waist; where more is worn it is generally in rags, and, in fact, still less a covering for decency.

As the traffic of the day will require their bed chamber, the crowd gradually rises and disperses to its various paths of mendicity and villiany. Then the shop keepers appear and open the booths or verandas which constitute their shops, resembling our news-stands, and creeping in here they stand ready to deal with their customers on the sidewalk.

—One of the many novelties at the Paris Exposition is a combined organ and piano, worked by wheels similar to those in a hand-organ, only this has 12 wheels, and each plays ten different operatic pieces. The mechanism is moved by steam, furnishing music for the multitude from morning till night.

General Summary.

The London Gas Companies.—It is proposed to consolidate the London gas companies (thirteen in number) into four gigantic corporations, the city to be divided into four districts, so that one corporation will supply gas to each of these districts. During the year 1866 these thirteen companies supplied London with the enormous amount of 8,65°,000,000 cubic feet of gas.

The Panama Railroad.—It is now eleven years since this road has been opened, and during that period 400,000 passengers and 614,235 tuns of goods have passed over the line. This year it is expected that 150,000 tuns will pass over it. In 1856 the income was 136,741 dollars and the expenditure 530,249 dollars. In 1866 the income was 2,424,977 dollars and the expenditure 1,208,364 dollars.

Instantaneous Lighting.—At the Royal Palace at Berlin, forty thousand wax candles are instantaneously lighted by one match. The mode of proceeding is simple enough, the wicks being all previously connected by a thread spun out of gun cotton, on lighting one end of which all the candles are lighted simultaneously, and thus the whole of the seven hundred apartments are illuminated at once. In Russia the same ingenious method is employed for lighting up the churches on grand occasions.

Oxidation by Means of Charcoal.—A communication was recently read at the London Chemical Society, concerning experiments made with recently burned boxwood charcoal. It was first placed in pure oxygen gas, and after being saturated with other gases and vapors, the absorption as well as the resulting vapors were noted. Moist sulphurous acid and sulphuretted hydrogen were changed to sulphuric acid; common alcohol to acetic acid, amylic alcohol to valerianic acid; but the author asserted that ammonia does not undergo oxidation in the pores of charcoal.

Carbonic Acid Baths.—At Piermont, in Germany, there is a natural spring of carbonic acid gas, the sides of which have been walled up, and steps laid for entering it. The well is shallow, and the gas fills it to a depth of about four feet, so that the gas rises about to the middle of a person standing in the well. Carbonic acid, in contact with the skin, produces a peculiar pricking sensation, and people visit Piermont for the purpose of taking a carbonic acid bath. There is a similar spring at the New Almaden Quicksilver mines in California, walled and planked up, with steps leading down it, but whether it is ever used as a bath we do not know.

A Metallurgical Miracle.—Bellani mentions the following very curious experiment: Melt an alloy of tin or lead in a crucible or ladle, allow it to get cold, and then write with ordinary ink on the surface of the metal, which has been in contact with the sides of the vessel; you may again melt the alloy, and after it has cooled you can still read the letters on the surface. The melting may be repeated several times, and the letters will still be visible, even if the metal has been stirred while melted. Bellani's explanation of this curious phenomenon is, that a very thin layer of oxide is formed by the ink, which oxide is not reduced by the repeated burning of the metal.

About Petroleum.—The *Oil City Petroleum* says: After all that is said about the losses and failures that have occurred in the oil region, all agree that it is the best part of the country for money-making purposes. Times are better and money is easier here than anywhere else we know of. This fact is well understood and appreciated by our business men, and more especially are they convinced after visiting other sections and witnessing the dullness of the times which everywhere seem to prevail. Business in this region is good, and is improving in a steady and healthy manner. Next year we predict very lively times here. The entire region is now recovering from the disastrous effects of the great speculation of 1864–5. The business of producing is yet in its infancy. It has a great future before it. The time will come when our oil will be refined at the point of production, thus greatly increasing our business and wealth.

Mining Share Market.

The San Francisco Weekly Stock Circular of October 12, gives the market rates of mining stock as follows:

The following is a condensed review of claims upon the Comstock Lode for the past nine months:

SAVAGE has been in marked favor during the past nine months, having, at the beginning of July, reached the highest market price during the year—$5,000 per foot—declining to $4,000 in August, and under the division of the stock into twenty shares to the foot sold during the month of September at a rapid decline from $225 per share to $115, improved to $162, and during the past week fell to $105, ex-dividend, closing at $121.

HALE & NORCROSS has lately been sold to a considerable extent at a very great decline. During the first six months of the present year this stock seldom made its appearance in the market, being firmly held at about $3,500 per foot; early in September sales were made at $2,500, rapidly declining since that period to $440 per share, and closing at $500. It has paid regular monthly dividends of $125 per foot during the past quarter, and since January last its stockholders have received $1,100 per foot.

CROWN POINT gradually advanced to $2,330 per foot in June, that being the highest price obtained during the present year, declined to $890 in July, rallied to $1,650 in August, fell to $525 in September, rallied at the close of that month to $750, and closed at $600 per foot.

YELLOW JACKET rose to $2,030 early in June, fell to $750 in July, improved to $1,110 in August, dropped to $380 in September, then sold at $335, and closed yesterday at $340. The dividends of this company during the past nine months reach $250 per foot against $150 same time in 1866.

GOULD & CURRY has been comparatively quiet during the entire period under review, selling within a range of $370 to $860 per foot from January to July, at the close of August at $525, falling to $300 in September, and closing at $285.

CHOLLAR-POTOSI has been very active during the period under review, and the favorable developments have given it more than usual prominence in the market. The stock advanced from $215 in January to $662 in May, gradually receded to $359 in September, and closed yesterday at $198.

EMPIRE rose to $292 in April, then sold within a range of $160@185, and closed yesterday at $150.

IMPERIAL advanced from $130 in January to $281 in April, declined to $186 in May, sold at $234 in July, fell to $135 in September, and sold during the past week at $117@114.

The aggregate sales of stocks, legal tender notes, etc., at the regular sessions of the Board since Saturday last amounted to $1,309,194.

PATENT CLAIMS.

70,166.—METHOD OF REMOVING CARBON FROM GAS RETORTS.—B. E. Chollar, Leavenworth, Kansas.

I claim the use of a jet of steam in the stand-pipes of gas retorts to cause a draught of air through the retort for the purpose of burning or consuming the deposit of carbon, substantially as described.

70,184.—GAS GENERATOR.—Matthew Faloon, Bloomingington, Ill.

I claim the combination of the fountain, e, connected to the generator, B, by means of the tube, b, with the sack, A, provided for different forms of nozzle, substantially as herein shown and described and for the purposes set forth.

70,207.—GAS COOKING APPARATUS.—David G. Haskins, Cambridge, Mass.

I claim, 1st. A gas cooking apparatus formed with the double casing, a, c, fitted as described with wire netting, in combination with the combustion chamber, b, and exit flue, f, the inner casing being provided with a hole for the reception of a kettle or other culinary vessel and with openings and covers, h, for the escape of steam, etc., substantially as specified.

2d, The combination of the metal-plate or cover, e, provided with the diaphragm, e', with the perforated inner casing, c, and the combustion chamber, b, as set forth.

70,272.—MODE OF LIGHTING STREET GAS-BURNERS.—E. P. Russell, Manlius, N. Y.

I claim a small supplemental burner, A, to be kept burning constantly when operating in connection with a main burner, substantially as and for the purposes set forth.

70,365.—MODE OF FACILITATING THE FLOW OF ILLUMINATING GAS THROUGH PIPES.—James F. Russell, Washington, D. C.

I claim the method herein described of heating and keeping at an even temperature gas, water, or other pipes by allowing steam, hot-air, etc., to pass in at one end of a case pipe, surround the inner pipe, flow along its whole or partial extent, and pass off in the manner substantially as described, for the purpose set forth.

70,395.—GAS STOVES.—John Q. Birkey, Philadelphia, Pennsylvania.

I claim, 1st, The tube, B, arranged in respect to the hollow cone D, and wire gauze or perforated disk, E, substantially as and for the purposes set forth.

2d, The plate, F, with its inclined inner edge arranged in respect to the perforated plate or wire gauze disk, substantially as and for the purpose described.

70,398.—GAS CHANDELIER ATTACHMENT.—Alfred Bliss, New York City.

I claim the combination of a wheel or reservoir, supplied with gas in any convenient manner, with a flexible tube, for the purposes indicated.

70,432.—GAS COOKING RANGES.—David G. Haskins' Cambridge, Mass.

I claim, 1st, The combination of the base, A, and combustion chambers, *a b*, with the ovens or cooking-apartments, B C, and the interior inclined flue space, *s*, as and for the purpose specified.

2d, The combination of the base, A, and combustion chambers *a b*, the ovens or apartments, B C, as and for the purpose specified.

3d, In combination with a gas cooking range constructed substantially as described, a water-back, E, as set forth.

70,477.—PORTABLE GAS-GENERATING FURNACE.—William M. Sloane, Buffalo, N. Y.

I claim, 1st, The combination and arrangement of the vaporizing chamber, B, with a common heating-furnace or stove A, a1 a2, for the purpose and substantially as described.

2d, The combination and arrangement of the retorts, C C, with the fire-chamber of a common heating-furnace or stove, for the purpose and substantially as herein described.

3d, The combination and arrangement of the furnace or stove, A, a1 a2, vaporizing chamber, B, retorts, C C, and conducting pipe, d, in the manner and for the purpose substantially as set forth.

4th, The valve, G, for automatically regulating the supply of the hydrocarbon fluid to the vaporizing chamber, B, substantially as described.

5th, The valve, H, for automatically removing or conducting the surplus gas into the smoke flue of the furnace, substantially as described.

6th, The combination of the gasometer, J, gas pipe, E, branch pipe, h', and waste valve, H, for operating in the manner and for the purpose substantially as herein described,

—The thermometer was invented in Holland about the year 1699. The merit of its construction is not ascribed to any particular individual, but is distributed among many, as it was gradually brought to perfection.

B. S BENSON,

MANUFACTURER OF

CAST IRON PIPES AND FITTINGS

FOR

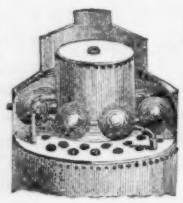
GAS AND WATER MAINS.

All sizes from 3 to 30 inch cast vertically in 12½ feet lengths.

Office and Factory 52 East Monument street.

BALTIMORE MD. [184

DAVIS' PATENT SAFETY Steam Superheating Boiler,



Requires only 25 lbs. of coal per day to the horse-power. Are made of the VERY BEST IRON, double lapped and double riveted.

Being upright, occupy little space, and are easily cleaned.

Without additional fuel, the Superheater increases the working capacity of the steam 25 per cent., which has been fully demonstrated by the many now in use. (See illustrated circulars). Address the

DUPLEX STEAM BOILER MF'G COMP'NY,

Long Island City, N. Y.

STEAM, GAS

AND

WATER PIPES,

BOILER FLUES,

And all kinds of Brass and Iron Fittings, Tools, &c., for Steam and Gas Fitter's use.

☞ The best and largest assortment in the city, and at greatly reduced prices. Send for Price List.

J. B. FULLER,

187 47 DEY STREET, NEW YORK CITY.

HEALTH AND ECONOMY.

PATENT LEAD-INCASED TIN PIPE COSTS LESS THAN LEAD PIPE AND IS MUCH STRONGER.

INDORSED BY PHYSICIANS AND WATER COMMISSIONERS EVERYWHERE.

Recent improvements enable us to supply this pipe at a less price per foot than common lead pipe. To furnish the cost we should know the head or pressure of water and bore of pipe.

Pamphlets sent free. Address the

COLWELLS, SHAW & WILLARD M'FG CO.,

184) Foot of West Twenty-seventh st., New York.

T. B. BYNNER,

IMPORTER AND DEALER IN WATCHES AND JEWELRY, Agent for the AMERICAN WATCH. Also every variety of Swiss and English watches, AT THE LOWEST MARKET PRICES.

189 BROADWAY, NEW-YORK.

Opposite John Street. 62-85

GAYLORD'S PATENT COUPLINGS,

Fig 5

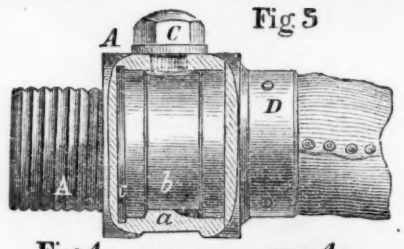


Fig 4

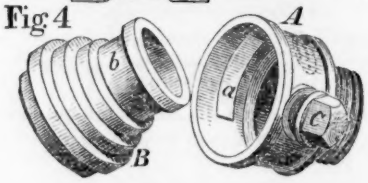
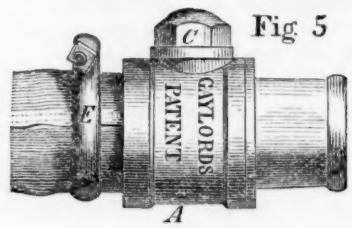


Fig. 5



FOR

Hose, Engines, Hydrants, Ships, Steamboats, Steam, Force and Garden Pumps, Faucets for Public and Private Buildings, Gas and Water Pipes, Hose Pipes and Hose of all description, etc.

MANUFACTURED ONLY BY

GAYLORD'S PATENT COUPLING CO.,

185 31 and 33 Dey street, New York.

JOHN B. FULLER,

47 Dey Street, New York City.

MANUFACTURER AND DEALER IN

Portable and Stationary

Steam Engines and Boilers,

From 2 to 250 Horse Power.

Most approved Circular and Upright Saw Mills, Grist Mills, Sugar Mills, and all kinds of Mining and Plantation Machinery on hand and built to order.

☞ Shafting, Pullies, Leather and Rubber Belting, and all kinds of Iron and Wood-working Machinery.

☞ Machinery and Railway supplies in store, and shipped at the lowest rates. 187

W. ANDERSON,

MANUFACTURER OF

GAS BURNERS,

NEW HAVEN R.R. DEPOT,

Corner Franklin and Elm sts., (up stairs), ... NEW YORK.

First quality Scotch Union Jets, Improved Cylinder Burners, Pivers and Burner Pillars. Burner Tips made to order. [876m.

TO GAS COMPANIES.

WANTED.—A SITUATION AS SUPERINTENDENT of Gasworks or Inspector of Meters. The subscriber has had 15 years' experience in England. Age, 39. Address Henry Arundel, Post Office, Covington, Ky.

FOR SALE.

THREE SECOND HAND PURIFIERS, EACH 4 feet diameter, and two feet eight inches high, with twelve inches Water Sute, four inches connections. Centre Valve and Sifting Apparatus complete, and four tiers Cheeseman's Sieves.

For price and further particulars, apply to Brookline, (Mass.), Gas Company. 87-2t

BABCOCK & WILCOX'S

Patent Stationary Steam Engines

From 25 to 1,000 horse-power, built in the best manner and at the shortest notice by the

South Brooklyn Steam Engine and Boiler Works,

Imlay, Summit, and Van Brunt sts., Brooklyn, N. Y.

☞ Over 4,000 horse-power of these engines are now running and contracted for. D. McLEOD, Proprietor. [188

BABCOCK & WILCOX'S

Patent Stationary Steam Engines,

BUILT BY THE

Hope Iron Works, Providence, R. I.

Warranted superior to any other Engine in the market for economy of fuel, regularity of speed, and non-liability to derangement.

188 JOS. P. MANTON, Agent.

MINER'S
PATENT STREET LAMPS

Are generally acknowledged to be the simplest, cheapest and most durable in use. The patentee is ready to fill all orders, or dispose of rights on liberal terms, as those at present engaged in the manufacture can attest. JACOB G. MINER,

Morrisania, Westchester county, N. Y.

LABORATORY
OF
INDUSTRIAL CHEMISTRY,
DIRECTED BY
Professor H. Dussauce,
CHEMIST.

Advices and Consultations on Chemistry as applied to Arts and Manufactures, Agriculture, Metallurgy, etc. Plans of Factories, Drawings of Apparatus, Analyses of Ores, Manures, Mineral Water, and Commercial Assays in general.

Prof. H. Dussauce is ready to furnish information on the principal chemical manufactures such as:

SOAPS,
CANDLES,
OILS,
PETROLEUM,
VINEGAR,
MATCHES,
MINES, ETC., ETC.

For further details address—

Professor H. DUSSAUCE, Chemist,
3 NEW LEBANON, N. Y.

SCHOOL OF MINES,
COLUMBIA COLLEGE,
EAST 49th STREET, NEW YORK.

FACULTY:

F. A. P. BARNARD, S.T.D., LL.D., President.
T. EGLESTON, JR., E. M., Mineralogy and Metallurgy.
FRANCIS L. VINTON, E. M., Mining Engineering.
C. F. CHANDLER, Ph. D., Analytical and Applied Chemistry.
JOHN TORREY, M.D., LL.D., Botany.
CHARLES A. JOY, Ph.D., General Chemistry.
WILLIAM G. PECK, LL.D., Mining Surveying and Mechanics.
JOHN H. VAN AMRINGE, A.M., Mathematics.
OGDEN N. ROOD, A.M., Physics.
JOHN S. NEWBERRY, M.D., Geology and Palaeontology.

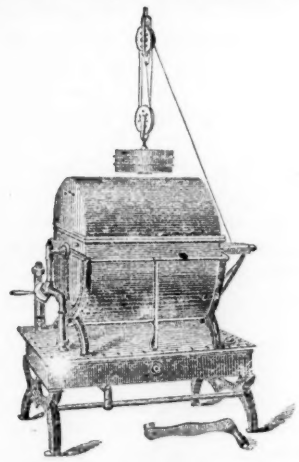
The plan of this School embraces a three years' course for the degree of ENGINEER of MINES, or BACHELOR of PHILOSOPHY.

For admission, candidates for a degree must pass an examination in Arithmetic, Algebra, Geometry and Plain Trigonometry. Persons not candidates for degrees are admitted without examination, and may pursue any or all of the subjects taught. The next session begins October 7, 1867. The examination for admission will be held on October 3. For further information and for catalogues, apply to DR. C. F. CHANDLER,
180-1yr. DEAN OF THE FACULTY.

NEW SYSTEM OF
VENTILATION.
—BY—
E RY A. GOUGE.

☞ Pamphlets ent free. Address Henry A. Gouge, 254 Broadway, New York. 178

O. P. DRAKE & CO.'S
Solar Gas Machines.



For lighting Private Dwellings, Churches, Hotels, and Factories in any locality and independent of any Gas Company.

We manufacture eight sizes of the SOLAR GAS MACHINE, ranging from ten to five-hundred light capacity. Every machine is put in operation and fully tested before it is sent off, and is guaranteed to give perfect satisfaction. This new apparatus is the result of 15 years of experience in this special line of manufac ure, and we feel warranted in asserting that our machine excels all others of a similar kind in the market. It is much simpler and more efficient than any former manufacture, and is constructed with special reference to safety and durability. There is no possibility of an explosion under any circumstances whatever, nor is the gas tank likely to leak or give out, or any part of the machine to get out of order, if reasonable care is taken of it. From five to fifteen minutes' attention is all that is required to keep any size of machine in perfect working order to supply all the burner-jets in a dwelling or factory.

Testimonials.

NEW YORK, Aug. 20th, 1867.

MESSRS. O. P. DRAKE & Co.:

GENTS.: We are pleased to inform you that your SOLAR GAS MACHINE, which we have now used in our factory at Mansfield Mass, for more than one year, has given us entire satisfaction in all respects.

In our judgment, with proper arrangement, it is as safe as ordinary coal gas, and the expense of using it we do not consider more than one-half. We cordially recommend it to any who have use for it for similar purposes. (Signed) Respectfully yours,

MERRITT & DRAPER, 12 Maiden Lane

From the Superintendent of the Schaghticoke Woolen Mill, N. Y.

SCHAGHTICOKE WOOLEN MILL, N. Y.,
Feb. 27th, 1866.

MESSRS. O. P. DRAKE & Co.:

GENTLEMEN: I write you to say we have now had a fair trial of your gas machine, having used it, with three hundred lights, since December last; and I have pleasure in reporting that it has given us complete satisfaction in all respects. I have used the oil-gas and find yours much cheaper, and attended with much less trouble. Very respectfully yours,

ROBERT DOBSON, Supt.

From the Superintendent of the N. J. State Lunatic Asylum.

STATE LUNATIC ASYLUM, TRENTON, N J.,
August 29th, 1866.

O. P. DRAKE & Co.: In reply to your inquiry as to the working of the three-hundred-light SOLAR GAS MACHINE, put up by you a this Institution in April last, I have to state that our expectations have been fully met in all respects. . . . The light is excellent in quality, and regular in supply. It has also proved to be economical. . . . I can cordially recommend the machine, etc., etc.

H. A. BUTTOLPH, M. D., Sup't of Asylum.

THE SOLAR GAS MACHINES

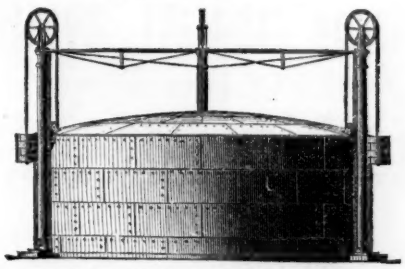
We keep on hand range in size from No. 1 to No. 4, and occupy a space for No. 1, 2 x 3 feet, 2¼ feet high up to 2½ x 5 feet, 4½ feet high for No. 4, weight of machines from 350 to 1,000 lbs. The No. 1 will supply 5 Argand or 10 bat's-wing burners 6 hours, and No. 4 will supply 50 Argand or 100 bat's-wing burners 6 hours.

Larger sizes, capable to supply several hundred lights, manufactured to order. Cast and wrought iron gasoline tanks furnished of any capacity. The trade supplied on reasonable terms.

For further information apply to

Messrs. SMITH & DRAKE, Agents,
187 726 BROADWAY, NEW YORK.

ERIE BASIN IRON WORKS,
MANUFACTURERS OF



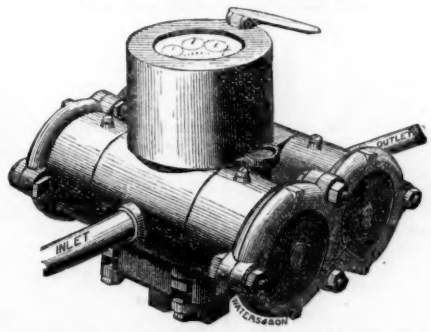
GASOMETERS
OF ALL SIZES INCLUDING
FRAMES, GIRDERS, STANDING PIPES, WALL PLATES, GAS MAINS, RETORTS, ETC. ETC.
ALSO
STANLEY'S
Patent Hydraulic Gas Main.

Our superior facilities for doing this class of work encourages us to solicit Gas Companies and others to give us their orders.

We have excellent arrangements for shipping directly from the works, the depth of water being ample.

Office and Works on
Dwight, Elizabeth and Van Dyke streets,
SOUTH BROOKLYN, N. Y. 1

H. R. WORTHINGTON'S



PATENT WATER-METER.
This Meter is also used for the measurement of Oil —it combines

ACCURACY, SIMPLICITY, and REMARKABLE DURABILITY with such ease and certainty of motion, as to offer no appreciable obstructions to the flow of water in the pipes to which it is connected, as it runs and registers upon three inches head, or when delivering the smallest stream. These qualities, with its low cost, have caused its extensive adoption by corporations and individuals, in many of our largest cities.

HENRY R. WORTHINGTON,
61 Beekman steet, N. Y.

MUSGRAVE'S
GAS COOKING STOVES.
Office No. 158 West Sixth street,
CINCINNATI, OHIO.

☞ These stoves do every variety and kind of Cooking. They will work on a common wash-stand, table or shelf. Additional stoves may be attached at pleasure, to do any amount of work.

The apparatus is NEAT, CLEANLY and ECONOMICAL, and the LABOR SAVED IS WORTH ALL THE GAS CONSUMED.

Parties desirous of learning more of this valuable invention, can see the a paratus at 22 Pine street, Room 10, New York.

Mining & Petroleum Standard
AND
AMERICAN GAS-LIGHT JOURNAL,

Published on the 2d and 16th of Each Month

At No. 22 Pine Street, New York.

BRYANT, CALLENDER & CO.,

EDITORS AND PROPRIETORS.

SATURDAY, NOVEMBER 16, 1867.

WISHING TO MAKE this Journal an organ of intelligent discussion to those of our readers who may wish to gain or give information on the subjects to which its columns are devoted, the publishers solicit letters from all among them who make the study of those subjects a pleasure, or a profession.

SUBSCRIBERS would confer a favor upon us by remitting CHECKS OR POST OFFICE MONEY ORDERS, as we are frequent losers where money is enclosed in letters.

☞ NEWS AGENCY.—The American News Company, 119 and 121 Nassau street, New York, are agents for this Journal. Newsdealers will please send orders to them.

CONTENTS OF NO. 10

Floyd's Adjustible Main.... 145
The Properties of Iron and Steel.. 145
Arnold's Metallic Purifying Tray 146
Cornell & Pease's Pump... 146
Prussian Railway Carriage. 146
Chemical Products from the Distillation of Peat..... 146
Indestructible Railway Sleepers..... 146
Advantages of Gas..... 147
History of Illuminating Gas 147
CORRESPONDENCE—
Important to Gas Men... 148
"New Feature in Gasometers"..... 148
Coal Bricks..... 148
Necessity for Further Methods for Converting Steel 148
Useful Recipes 148
The Departure of the Swallow (Poetry)..... 149
MISCELLANY—
The Cathedral of Seville, Spain, and the Curious Dance Performed on Corpus Christi. 149
Sunrise in Calcutta..... 149
GENERAL SUMMARY—
The London Gas Companies 149
The Panama Railroad... 149
Instantaneous Lighting.. 149
Oxydation by Charcoal.. 149
Carbonic Acid Baths..... 149
Metallurgical Miracle.... 149
About Petroleum..... 149
Mining Share Market..... 150
PATENT CLAIMS 150
Answers to Correspondents. 152
EDITORIALS—
The New Gas Coal..... 152
Artificial Light — The World after Sunset.... 122
Improvements in Gas Apparatus—New Gas-works, etc 158
Counterweighting Gasometers — Proposed Convention of Gas Engineers.... 158
Gasworks and Apparatus For Sale..... .. 158

Answers To Correspondents.

S. S. OF PA.—India-rubber will dissolve in naphtha, and if thinly spread on a surface, the naphtha will evaporate and the rubber regain its former properties. To make india-rubber hard mix it with sulphur and some lamp black, red or white lead, according to the color you desire, and subject it to a temperature of about 300°. Goodyear's patent covers this process, however.

N. A. P., OF NEW YORK.—To bleach shellac cheaply, expose it in thin sheets to the sun's rays. Chlorine gas will also discharge any color it may have. Placing it in hot water and working it as you would molasses candy will give it a white color. Shellac cement for crockery, etc, sold in the shops is made in this manner.

P. A. D., OF ILL.—Water was raised by the alternate force of steam and the vacuum produced by condensed steam, long before the modern steam engine was invented. Savery first employed this system to raise water.

L. B., OF OHIO.—It is not the quantity of gas which determine the value of gas, but its illuminating power. Rosin gas has about double the illuminating power of ordinary coal gas. Albertine coal is much richer than Cannel—that is, it will yield gas of a higher illuminating power per cubic foot.

—The oil tubes, it is stated, have been laid across the Alleghany river from Oil City to the track of the Alleghany Valley Railroad. In order to prevent these tubes from being carried away by ice or drift wood, they have been embedded in the bottom of the river. They greatly facilitate the shipment of oil.

THE NEW GAS COAL.

It has long been a great desideratum with Gas Companies of the United States to obtain bituminous coals for the manufacture of gas and other purposes from our own mines at "Home" that would take the place of imported coals from England and elsewhere, and thereby free us from a foreign tax upon our light.

With all our boasted wealth of coal lands, and with mines in nearly every part of the country yielding up their "black diamonds" almost without cost, wherewith most other industries have been benefitted to a stupendous degree, there has been a great want of good gas coal equal in quality to the Cannel, and other foreign coals.

This condition of things no longer exists. The general belief has obtained, that we had the coveted article somewhere amid our great mineral resources, and that perseverence, industry, and energy would finally discover and bring it forth, until at last we have it in the "Cameron Coal" of Pennsylvania.

This coal is being mined and sent to market by the Cameron Coal Co., whose property is situated in Cameron County, Pa., at a point accessable by a number of our great carrying routes: so that it can be supplied at about equal cost to the seaboard cities and the numerous growing cities and towns of the West.

We believe this coal was first used to any considerable extent by the Philadelphia Gas Company. It was subsequently offered to our Brooklyn and New York Gas Companies, but met with little favor except some tests on a small scale, until Mr. W. P. Libby, President of the Citizens' Gas Company, of Brooklyn, Mr. Ambrose J. White of the Metropolitan Gas Company, and Jos. A. Sabbaton of the Manhattan Gas Company, of New York, finally gave it an extended trial at about the same time; which was so favorable in its results that its great value as a superior gas coal may be considered definitely settled.

At the present time, all these companies and others are using it, and getting better results, every thing considered, than were ever before obtained with the best Cannel, Wigan, or other coals.

As a criterion of its quality we may mention the test made by W. P. Libby, Esq, of the Citizens' Gas Company, of Brooklyn, which gave a result so favorable that he closes the report by saying, "I know of none—taking into account the quantity of gas produced, the illuminating power, and freedom from impurities—which equals it among American coals."

Jos. A. Sabbaton, Engineer of the Manhattan Gas Company, reported on a sample of the "Star" vein, a maximum yield of 10,896 cubic feet per ton. When the yield was restricted to 9,500 cubic feet per ton, the illluminating power was equal to 19.07 standard candles. The yield of coke per ton was 42 bushels, weighing 1,570 lbs. Mr. Sabbaton further says, "The coke is of excellent quality; it makes very little clinkers, and is very free from ashes. One bushel of hydrate of lime purified 4.84 cubic feet of gas. In many of the lumps of coal seams of pure Cannel can be traced. In every respect this is a first-class coal."

Another test of samples from the "Hope" vein gave very nearly a similar result, viz., 10,625 cubic feet.

Mr. G. T. Sutton, of the Peekskill Gas Works, in a letter to S. L. Simpson, Esq., President of the Cameron Coal Company, after he had used it for a year said, "I place it among the best of coals."

In the annual report of Chas. Thomson Jones, President of the Phidadelphia Gas Works, he says, "The entire amount of Cameron Coal was used in the year 1864, and the result shows one of the best yields of gas that the works have ever had."

Joseph Manuel, Esq., Engineer of the Philadelphia Gas Works, says, "The gas made from the Cameron Coal by photometric test of its illuminating power, is equal to 16 English standard wax candles, (Judd's patent), and the chairman of the committee pronounced it equal to 17½ of sush candles."

This array of tests and facts is conclusive that we have found here at last, a substitute for the expensive foreign coals. Besides the great value of the Cameron Coal for gas purposes, it will be found equally valuable for the smelting and refining of iron, and for the use of locomotives and steam purposes generally.

We can foresee that the discovery and introduction of this coal, will form an important epoch in the progressive history of more than one of the great industrial and manufacturing interests of this country.

ARTIFICIAL LIGHT—THE WORLD AFTER SUNSET.

Perhaps there is no branch of industry in our country increasing more rapidly at the present time than the manufacturing of gas for illuminating and heating purposes, etc. The amount of capital invested and being invested in gas stocks is enormous, as well it may be when we consider the great importance and value of artificial illumination. It ministers to our comforts and our pleasures, and enhances our enjoyments; in fact, it lengthens our lives—the waking and animated portion thereof, as will be readily acknowledged, when we consider that at least one-third of our existence is made useful and enjoyable after the sun has left us, to gloom and darkness, otherwise, wherein me may continue to perform not only all the business avocations commenced in the day; but it is the period peculiarly appropriate to social intercourse and the intellectual enjoyments which form so material a portion of the happiness of an intelligent and enlightened people.

The use of gas as a domestic and commercial article for illumination, heating, cooking and other purposes, among which may be mentioned its substitute for steam as a motor even now, after one-half of a century, may be considered only in the infancy of its coming usefulness. Few persons, when enjoying the present conveniences of gas-light, imagine how modern its discovery and application is It was unknown to our grandfathers, and the most visionary romancer had not dreamed of it a hundred years ago. Washington and Lafayette knew no such luxury, and the Declaration of Independence was signed by the light of candles instead of gas.

By the reflections of the past, may we not attempt to read and anticipate the future?

The German alchemist, Van Helmont, first discovered the composition of atmospheric air about the year 1624. He also observed in the Spa waters of Germany a peculiar æreform elastic substance—carbonic acid gas—and from its supposed peculiar ethereal qualities named it Gheist (ghost or spirit), from whence we obtain the present English word gas. In 1667 a Mr. Shirley, living at Wigan, England, wrote and published a series of experiments commenced by him in 1659, on the gas evolved from the waters of a "burning spring" on the Warrington road. Boyle improved upon Van Helmont's experiments, and proved that fixed air and inflammable air are elastic fluids, capable of being exhibited distinct from and unmixed with atmospheric air. In 1783 the Philosophical Transactions record some valuable suggestive experiments made in a coal pit near Whitehaven, in Cumberland. Gas issued from clefts in the coal, which caught fire and burned with

great brilliancy, to the infinite discomfiture of the workmen. Some of it was taken to the Royal Society and exhibited, and burned from bladders. Still no glimmering idea of its vast capabilities of usefulness broke upon the intellect of the wigged savans.

In 1726 "the ingenious" Dr. Stephen Hales first obtained gas by distilling coal. In 1739, Rev. Dr. Clayton obtained gas (light carburetted hydrogen) from a ditch near Wigan, England, which was found to proceed from a "shaly coal." He subsequently distilled this coal and obtained a "black oil" (tar), and lastly a spirit or gas which burned.

Van Helmont had decomposed air. Shirley had observed that certain air arising from the earth would burn. The Whitehaven experiments proved that inflammable air could be kept in bladders, and finally, the learned Dean proved that gas could be obtained from coal by distillation. In 1767 Dr. Watson discovered that gas could pass through water and retain its inflammability. It was first used to light houses in Cornwall. In 1792 Mr. Murdoch used gas to save oil and candles, introducing it in his own house, and in 1798 James Watt lit up his foundry at Old Cummock, in Ayreshire.

In 1807 it was introduced into London, England. This brings us to the period when the intesesting history of gas begins; by it London was brought at least one-half of the twenty-four hours out of darkness into light. The feeble glimmer of whale oil lamps, the glare of torches, and the noisy nondescript link-boys, the huge perforated lanterns, then so common, are remembered only by the inhabitants whose memories of the past began over half a century ago.

IMPROVEMENTS IN GAS APPARATUS—NEW GAS-WORKS, ETC.

Few persons who nightly make use of gas-light to lengthen out the hours of business or pleasure, which the great luminary, the sun, cuts shorter day by day at this season of the year, realize the amount of ingenuity, talent, labor and capital that is employed in improving and perfecting the various apparatus and machinery for manufacturing gas, and the multifarious appliances for using it. Thousands of dollars are expended in this city alone, every month, simply in experimenting with the object to improve and simplify the machinery employed in manufacturing gas, or in endeavoring to produce a cheaper article and a more perfect light. Others again are studying how to extend the field of its application, not only for lighting but for heating, and as a motive power and for other purposes.

In this connection we are brought to notice the improvements of Mr. Floyd, of the firm of Herring & Floyd, of this city, in his "Adjustable Hydraulic Seal," which is fully illustrated on our first page. An improvement of a similar nature, by Mr. I. N. Stanley, of Brooklyn, was illustrated in the last number of the Journal. In the same number also was a description and engraving of a new appliance to heat buildings by the combustion of gas, invented by a gentleman of Cambridge, Mass. This invention is applied to stoves and furnaces for heating, and to ranges, etc., for cooking, and we understand they are becoming very popular even in the Western States, where gas is much dearer than it is here.

NEW GAS WORKS, ETC.

Messrs. Herring & Floyd informs us that they have lately erected additional to the gas works in Buffalo four purifiers 20 tubes in connection, each set 20 feet by 20. The Buffalo Gas Company have also built a new purifying house, 120 feet long and 50 feet in width.

The following are also some of the recent works built or improved by Messrs. Herring & Floyd, which will give some idea of the changes that are taking place in other parts as well.

At Sing Sing, N. Y., a new set of apparatus has been put in consisting of 4 purifiers, a condenser and washer, also 4 benches of retorts.

At Syracuse, N. Y., 6 new benches of six in a bench, clay retorts 20 x 12, 8 feet 6 inches in length, made by J. K. Brick & Co, also a McKenzie's Purifier—last year this company added 4 new purifiers.

At Cohoes, N. Y., these gentlemen have erected entire new works—6 benches of three's 15 x 22 and 8 feet in length, and all the apparatus complete.

At the Troy, N. Y., works a new gasometer with a capacity of 60,000 cubic feet has been erected. This company are about to abandon the old works, because they have not sufficient capacity. Mr. Fred. A. Sabbaton, brother of engineer J. A. Sabbaton is superintendent of these works.

At Paterson, N. J., (new works complete) Messrs. Herring & Floyd supplied all the apparatus except the gas-holder, which was built by Geo. W, Krafts, of Philadelphia.

At Savannah, Ga., 15 benches of five's—clay retorts, 10 x 12, have lately been put in, made by Mr. Gautier, of Jersey City.

At Meriden, Conn., 3 benches of three's 20 x 12, iron retorts and fittings, supplied. Mr. J. A Hadley, formerly of Havana, is superintendent at Meriden.

Mr. I. N. Stanley is erecting works at Flatbush, L. I., which will be in operation in a few days. Retorts, clay, made by J. K. Brick & Co. Fittings, castings, etc., made by Messrs. Morris, Tasker & Co, of Philadelphia.

Mr. R. T. Coverdale is erecting new (opposition) works at Memphis, Tenn., for the Peoples' Gas-Light Company.

Mr. Thomas Pratt, superintendent of the St. Louis Gas Works, is completing new works at Kansas City. Mo. Retorts, clay, made by Messrs. Hambleton & Green, of St. Louis.

COUNTER-WEIGHTING GASOMETERS.

PROPOSED CONVENTION OF GAS ENGINEERS.

Under the head "Correspondence" will be found a suggestion in regard to the questionable utility, in practice, of using weights to balance the upper or inner section of gasometers, which will be noticed with interest by the many young gas engineers among our readers. We are glad to have such eminent authority as the writer referred to, take sufficient interest to be willing to keep all who are interested posted as to what is new and valuable. The elucidation of one new and original idea will often give rise to another, while the interchange of ideas and views upon any subject will always be of great benefit, and in this manner improvements will be developed and mistakes avoided in the multifarious details of gas engineering, which will tend to bring the art nearer and nearer to perfection.

In this connection we would also refer to the correspondence signed "R," whose views, suggestions and experience, as will be seen, goes to prove the value of, and necessity for, more intercourse and a better acquaintance among our gas men and gas engineers. His suggestion to have a convention of all whose tastes, calling, and interests appertain to gas matters, at Cincinnati some time next Spring is a capital thought, and we hope the idea may be carried out.

We will be glad to have all who are favorable to this project communicate with us, and if the feeling proves to be general (as we do not doubt it will), a plan can be devised and carried out to bring about this desirable and laudable enterprise.

☞ GAS-WORKS AND APPARATUS FOR SALE.—We desire to direct the attention of contractors and gas men to the advertisement of the Meadville, Pa., Gas Company, to be found in another column. The company having enlarged their works, offer at very low figures apparatus including gasometer, meters, purifying boxes, centre valve, condensers, hydraulic main, dip and stand pipes, etc. etc., which are all in good condition, and ready to be set up and put in operation immediately. We consider this a rare chance for any party or parties who desire to erect works cheaply and with despatch.

The Cameron Coal Co.,

MINES LOCATED AT

Cameron, Cameron County, Pa.

New York Office, 42 Broadway.

S. L. SIMPSON, President.

DIRECTORS:

Fletcher Westray,	Paul Spofford	Wm. A Sale,
S. L. Simpson,	J. J. Crane,	Richard Warren,
Lawrence Myers,	Samuel N. Pike,	John L. Rutgers.

The Company are prepared to fill orders at the lowest possible prices for their Coal, which BY ACTUAL TESTS PROVES TO BE EQUAL TO ANY OTHER BITUMINOUS COAL MINED FOR GAS PURPOSES, and is equal to any in use for Locomotives and steam purposes generally.

FOR SALE.

ONE SET OF PURIFIERS ABOUT EIGHT FEET square, with Centre Valve and connections complete. One Cylinder Washer; one Station Meter 50,000 cubic feet per diem; one Gasholder, 46 feet diameter, 15 feet lift, with suspension and guide frame; also two suspension frames for Gasholders 50 feet in diameter, 17 feet lift.

For further information apply to or address

JOS. R. THOMAS,
Eng. Williamsburgh Gas-Works, N. Y.

GAS-WORKS FOR SALE—IN A THRIVING town, only a few miles from New York City, and not long in operation. Can be largely increased, and now running above 200 meters. Three miles of Gas Main now laid through the town. Works in excellent order, and will be sold on reasonable terms to a cash purchaser, or an exchange will be entertained for *good* State or County Bonds.

For further information apply to COL. J. A. SABBATON,
88-3 Manhattan Gas-works, New York City.

GLYCERIN

For Wet Meters, Gasoline Machines, Hydraulic Press; Etc.

WE WISH TO CALL THE ATTENTION OF GAS COMPANIES, and the Public generally, to our well-known GLYCERIN, which we are prepared to furnish as heretofore, as the most suitable, cheapest, and best preservative against Frost in Wet Meters, and for similar purposes. The experience of several years leaves no doubt about the superiority of our Glycerin over every other fluid applied to the same purpose.

For particulars apply to our Agent in New York, or at our office, where we keep a great number of certificates from Gas Companies on file, for reference.

HARTMANN & LAIST,
Cincinnati, Ohio.

☞ L. BRUCKMANN, 67 Wall street,
Agent for New York. 86-6mths.

FOR SALE.

THE MEADVILLE GAS COMPANY HAVING enlarged their works, offer for sale, at very low figures, the following:

One Gasholder 34 feet diameter by 14 feet deep, with six cast iron Columns and Braces.
One Station Meter, 36 inches diameter, 4-inch connections.
Four Purifying Boxes and Lids, with all the connections.
One Centre Valve, "Wet."
One lot Condensers, "Vertical."
Four lengths Hydraulic Main, with dip and Stand Pipes for three Retorts each.
One Washer.

The foregoing are all in good order, and will be disposed of at very reasonable figures.

For further information apply at the works, or to

ROBERT CARTWRIGHT,
Engineer Peoples' Gas-Light Co.,
190 Cleveland, Ohio.

JOB PRINTING.

STOCK CERTIFICATES,
ASSESSMENT RECEIPT BOOKS,
TRANSFER JOURNALS,
CIRCULARS,
HAND BILLS,
CARDS,
BILL HEADS,

And every kind of Job Work that may be desired, executed at the office of The AMERICAN GAS-LIGHT JOURNAL, No. 22 Pine street, New York.

Professor HENRY WURTZ,

Formerly Chemical Examiner in the U. S. Patent Office, may be employed professionally as a SCIENTIFIC EXPERT. Geological Examinations and Reports, Analyses and Assays etc. etc., Practical Advice and Investigations in the CHEMICAL ARTS and MANUFACTURES. Invention and Examination of new chemical methods and products. Address 26 Pine street, rooms 35 and 36. Always in at 1 P. M.

☞ WRITTEN COMMUNICATIONS PREFERRED.

IMPORTANT TO GOLD AND SILVER MINERS AND COMPANIES.

PROFESSOR WURTZ,

Who is the inventor and Patentee of the new and wonderful uses of

Sodium in Working Gold and Silver Ores and Jewelers' Sweepings,

Will furnish at the above address information relating thereto together with experimental packages of

SODIUM AMALGAM

TO PARTIES ENGAGED IN MILLING ORES ONLY.

All preparations and instructions elswhere obtained are spurious and unreliable.

☞ WRITTEN COMMUNICATIONS PREFERRED. (1-tf

LACLEDE FIRE BRICK WORKS,

S. HAMBLETON & JA[illegible]. GREEN,

PROPRIETORS,

Cheltenham. Mo.

Office, No. 1007, North Levee,..... St. Louis,

HAMBLETON & GREEN,

MANUFACTURERS OF

Fire Bricks, Tiles, Gas Retorts, Sewer Pipes, &c., &c.

Have on hand a good assortment of articles in their line, of a very superior quality, manufactured by them from the celebrated Fire Clay of Cheltenham, and for sale at reasonable prices and in quantities to suit,

AMONG WHICH ARE

BOILER TILES, Centre and Side of all sizes.

BRIDGE TILES, 6x12, 12x12, 12x18 and 12x24 inches.

CIRCULAR BACK TILES, all sizes.

FIRE BRICKS, Square, Arch, Split, Soap, Pressed, Jamb, Wedge, Key, Bull Heads Cut, &c., &c.

BLAST FURNACE LININGS, Bosh Brick and Timp Tile.

CHIMNEY TOPS, Fancy and Plain.

SEWER PIPES, all sizes.

GAS AND BONE RETORTS.

GROUND FIRE CLAY, &c.

Orders left at the office, No. 1007 Levee, between Washington and Carr streets, will receive prompt attention, and goods delivered without delay,

Purchasers can depend upon all articles purchased from us being equal, if not superior, to any other made in the country. (1-1y

P. J. MOORE, T. L. GAUSSEN, Late Inspector Cin. Gas Co.

MOORE & GAUSSEN,

Plumbers, Gas and Steam Fitters,

221 West Fifth street, Between Elm and Plum, CINCINNATI, OHIO.

WESTERN AGENTS FOR HARRIS & Co.'s PHILADELPHIA GAS-METERS, &c.

All Orders Promptly Attended To.

THE AUBIN BALANCED VALVE WATER METER,

(Used also for Oils and Liquors)

IS NOW IN USE BY MANY CITY WATER Companies, because of its LOW PRICE, SIMPLICITY, DURABILITY, ACCURACY UNDER ANY PRESSURE, and, (a great advantage,) because it runs with less head than any other meter used.

Manufactured by

H. Q. HAWLEY, Albany, N. Y.

Edw'd Van Orden & Co.,

Manufacturers of Fire and Water-proof

Plastic Slate Roofing Materials,

ROOFING TOOLS, &C.

Office 41 Liberty-st.

Edw'd Van Orden. Jas. E. Dunn. NEW YORK.

MILLS CONVENIENT FOR SHIPPING.

WILLIAM ELTING

Manufacturers Agents for the Sale of

PORTABLE AND

Stationary Steam Engines,

BOILERS AND MACHINERY,

No. 65 Liberty-St, NEW YORK.

☞ Leather and Rubber Belting supplied at usual rates. Circulars sent on application. 55-78

BIRD, PERKINS & JOB,

IMPORTERS OF

COAL FOR GAS, STEAM AND IRON

MANUFACTURES.

Agents for the sale of the **Westmoreland** Coal Company's celebrated

GAS COAL,

and the Consolidation Coal Company's "Ocean Mine"

CUMBERLAND COAL.

Particular attention given to the charter of vessels at the lowest freights.

89 INDIA WHARF, Boston. 104 WALL STREET, N. Y. 184

A. HITCHCOCK,

Inventor and Manufacturer of the

Cam Quartz Breaker and Pulverizer,

REVERSIBLE ROLLER MILL,

IDAHO MILLS & AMALGAMATORS,

Adapted to All Kinds of Power.

Unequalled for utilizing power—avoiding friction and wear,—rapidity of work, and facility of transportation and adjustment. Also, **Hitchcock's Adjustable Tubular Flue-cleaning Boiler,** and other valuable Patents, for which license to manufacture will be granted on reasonable terms. Circulars furnished on application.

53-76 *Office No. 4 & 6 Pine Street, New York.*

GEO. H. BRONSON,

132 Maiden Lane, New York,

Dealer in

Paraffine Machinery Oil,

From PURE CANNEL COAL, adapted to all classes of

Stationary Machinery, Locomotive Engines, Railroad Cars, Woolen Factories, Cotton Spindles, Sewing Machines, &c.

Paraffine Wax and Paraffine Wax Candles. Also the best brands of Burning Oils. All Oils guaranteed to answer the purpose for which they are recommended.

57 80

D. B. GRAY,

DEALER IN ALL KINDS OF

INDIA RUBBER GOODS

Vulcanized Machine Belting,

Conducting, Hydrant, and Engine Hose,

GUM STEAM PACKING,

Amidon's Improved Clothes Wringer,

And all kinds of Useful and Fancy Rubber and Vulcanite Goods,

No. 201 Broadway,

Middle of the Block between Fulton and Dey Streets, NEW YORK.

WILLIAM S. CARR & CO.,

Succesor to Sawyer & Co.,

SOLE MANUFACTURERS OF

Carr's Patent Water Closets,

URINAL VALVES, &c.

Also Manufacturers and Dealers in PLUMBING MATERIALS OF EVERY DESCRIPTION, Plumbers' Brass Works, Earthen Ware, Pumps, Iron Drain Pipes, Traps and Sinks, Copper Bath Tubs, Showers, &c., &c.

OFFICE AND MANUFACTORY

149, 151, 153, 155, 157 Centre Street, cor. Canal,

NEW YORK.

Illustrated Catalogue and Price List sent on application. 152-176

JAMES HOY. JNO. P. KENNEDY. WM. E. HOY.

HOY, KENNEDY & CO.,

Engineers and Contractors

FOR THE ERECTION OF

GAS WORKS,

Extensions, and Improvements, are prepared to supply

GAS-LIGHT COMPANIES

With all the materials used by them. [77-t

No. 111 Liberty street, New York.

JOHN P. NESSLE. JAMES A. TAYLOR.

Nessle & Taylor,

MANUFACTURING ENAMELERS

OF

IRON AND OTHER METALS.

97 Water street, Brooklyn. 171tf

JOSEPH NASON & CO.,

No. 61 Beekman street, corner of Gold,

NEW YORK.

Manufacturers of WROUGHT IRON PIPES and Fittings for Steam, Gas and Water, Boiler Flues, Steam Boilers, Coils, Heaters, Evaporators, Pumps, Ventilating Machinery, and Apparatus for Warming Buildings by Steam and Hot Water.

OIL TUBING, CAST IRON DRIVING PIPE,

Boring Tools, Oil Pumps, Sand Pumps, Stuffing Boxes, Tongs, Clamps, Swivels, Joints, &c. 131

J. H. TIEMANN.

ANALYTICAL CHEMIST,

Metallurgist & Mining Engineer.

☞ GOLD AND SILVER BOUGHT.

240 PEARL ST. Cor. BURLING SLIP, N. Y.

tf

CHAS. HOWDON SMITH,

BROKER IN MINING STOCKS

AND OTHER SECURITIES,

No. 5 1-2 PINE STREET,

ROOM NO. 5, NEW YORK.

THOS. CASSIDY & CO.,

(SUCCESSORS TO P. CAESIDY,)

Dealers in Old and New

IRON, COPPER, BRASS,

LEAD, SPELTER, &c.

Corner of Bridge and John Streets,

BROOKLYN.

☞ N. B.—The highest cash price paid for the above named articles.

T. CASSIDY, 57-80 J. PEARCE.

J. W. WHEELOCK,

DEALER IN

GASOLEINE.

SUITABLE FOR GAS MACHINES, ALSO FOR CARBURETTING OF GAS, &c.

70-94 **204 Pearl St., New York.**

D. VAN NOSTRAND,

Publisher and Importer of Scientific Books,

NO. 192 BROADWAY, NEW YORK.

JUST ISSUED.

A new edition of the General Catalogue of

FOREIGN AND AMERICAN SCIENTIFIC BOOKS,

Thoroughly revised, and with additional new and valuable works, up to July 1st, 1867.

☞ Copies sent to any address, post paid, on application.

MANHATTAN

Fire Brick & Enamelled Clay Retort Works,

MAURER & WEBER,

(Of the late firm of B. Kreischer & Co.)

PROPRIETORS.

Office & Works in 15th street, Avenue C,

MANUFACTURERS OF

Fire Brick and Tiles,

OF ALL SHAPES & SIZES,

Fire Mortar, Clay and Sand.

☞Articles of every description made to order, at short notice. (135

HY. MAURER. ADAM WEBER.

NEW YORK

Fire Brick and Clay Retort Works

☞ *Established in* 1345. ☜

(Branch Works at Kreischerville, Staten Island.)

B. KREISHER,

Office 56 Goerck St, cor. Delancey, New York.

GAS RETORTS, TILES and FIRE-BRICK of all shapes and sizes. FIRE MORTAR, CLAY, and SAND.

Articles of every description made to order at the shortest notice.

B. KREISCHER.

JOSEPH K. BRICK, EDWARD D. WHITE.

J. K. BRICK & Co,

BROOKLYN CLAY RETORT, AND FIRE BRICK WORKS,

VANDYKE STREET, BROOKLYN, N. Y.

J. H. GAUTIER & CO.,

MANUFACTURERS OF

Gas Retorts, Tiles and Fire Bricks,

Black Lead Crucibles, and Carburet of Iron Stove Polish,

JERSEY CITY, N. J.

Refer to—Manhattan Gas Light Co., New York. [135

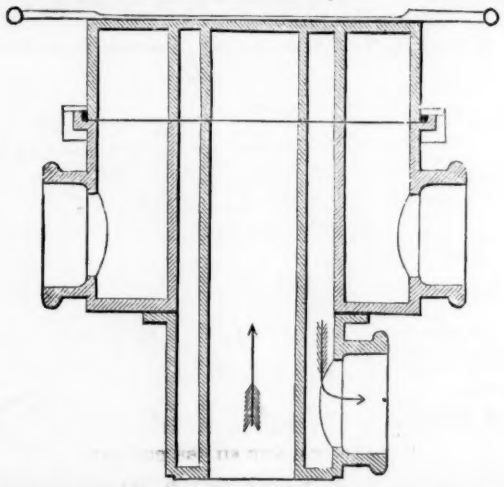
Philadelphia Fire Brick Works,

Corner of Vine and Twenty Third sts., Philadelphia,

JOHN NEWKUMET,

Manufacturer of all kinds of FIRE-BRICK, GAS-HOUSE TILES, to suit all the different plans in use. Clay Retorts and Dentists Muffles. Orders filled at short notice.

PATENT DRY CENTRE VALVE.



The **American Meter Company** invite the attention of Gas Engineers and Gas Light Companies to the PATENT DRY CENTRE VALVE, which is very superior to the HYDRAULIC CENTRE VALVE, and much more durable, besides being less expensive, and not likely to leak or get out of order. It has been successfully introduced at the following Gas Works, where reference may be had of its satisfactory performance:

Detroit, Mich.....	16 inch.	Louisville, Ky.....	6 inch
Philadelphia, Pa.....	12 "	Covington, Ky.....	6 "
Patterson, N. J.....	12 "	Zanesville, Ohio.....	6 "
Pittsburg, Pa.....	10 "	Indianapolis, Ind.....	6 "
Cleveland, Ohio.....	8 "	St. Joseph, Mo.....	4 "
Bloomington, Ill.....	8 "	Maysville, Ky.....	4 "
Meadville, Pa.....	6 "	Troy, Ohio.....	4 "

Having the Patterns complete for each size, from four inches to sixteen inche we are prepared to furnish them at short notice.

AMERICAN METER COMPANY,

512 West 22d Street, New York.

22d and Arch Street, Phil'a.

73-tf 23 West Street, Boston.

PRINCE'S METALLIC PAINT.

AN INDESTRUCTIBLE COATING FOR

IRON, TIN, and WOOD.

It consists of seventy-two parts Oxide of Iron, and twenty-eight parts Cement Lime Stone in the one hundred pounds.

It has much more body than red or white lead. It is warranted perfectly water and fire-proof and to withstand a greater heat on metals, without scaling, than any other paint in use.

It is a perfect cover for all kinds of iron, tin, or wood-work, out-houses, and canvas coverings. It prevents and arrests the corrosion of metals, and is not affected by the action of salt, gases, acids or ammonia.

It hardens under water, as has been fully demonstrated by its application to gas-holders, by many of the largest gas companies in the United States; which companies having thoroughly tested its properties as herein claimed, pronounce in its favor over any other paints in the market, even though said at double its price.

As a coating for patterns of iron or wood, when mixed with shellac, it is much superior to beeswax, oil, or shellac alone, as has been proven at the large founderies in the country.

For patching boilers and making joints, it is considered superior to red lead, or any other preparation.

For cleaning metals it takes the place of crocus, ouge, and emery, being better and cheaper.

This Paint requires no more oil than dry lead or zinc, and much less than the ordinary mineral aints. It is free from any waste, and possesses a spreading and covering power unequaled.

Terms, by the Barrel or Half Barrel, Five Cents per Pound.

A liberal discount made to parties purchasing by the ton.

A Barrel or Ton will be forwarded to any gas companies desirous of testing its qualities, for which there will be no charge if it does not give entire satisfaction as being the cheapest and most durable of all other Paints in the market.

Also, Prince's Imperial Black Paint, and Prince's Protoxide of Iron.

DANIEL SLOAN & CO., General Agents

115 LIBERTY STREET, NEW YORK.

WATER AND SEWERAGE PIPES,

KNIGHT-BAILEY PATENTS.

The Water Pipes are made of Wrought Iron, lined with Hydraulic Cement, with Socket Joints, and connections for service pipes already inserted. Entirely free from oxidation, they are absolutely indestructible. They can be laid and guaranteed for much less than Cast Iron Pipes.

The Sewerage Pipes are made of Hydraulic Cement. They stand the most severe tests of acids, increase with age, are perfect in interior finish, and cheaper than any other pipes made.

☞ We will contract for the water supply and drainage of cities and villages.

AMERICAN WATER AND GAS PIPE CO.,

N. W. corner of Green and Bay Streets, Jersey City.

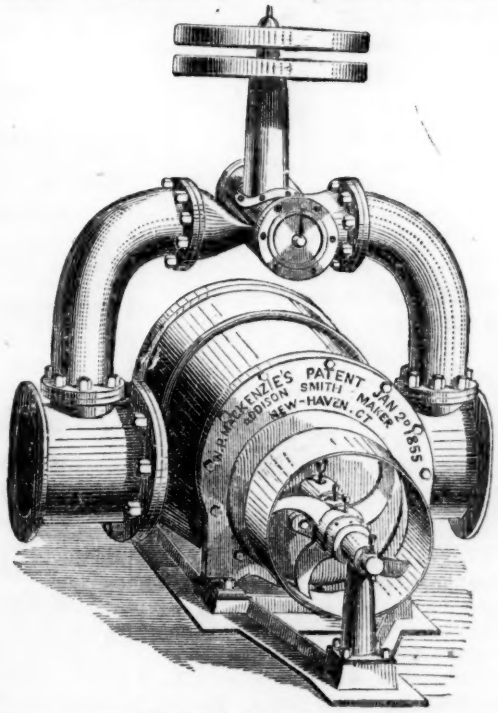
DIRECTORS:

J. R. HALLADAY, Pres. G. H. BAILEY, Eng'r. GARWOOD FERRIS, Treas.
WILLIAM KEENEY. JAMES CRAWFORD. STEPHEN MORGAN.

Smith & Sayre Manufacturing Company.

The Mackenzie Patent Gas Exhauster,

AND PATENT COMPENSATOR.



They are made to pass from 4,000 to 150,000 cubic feet of gas per hour; will increase the production and illuminating power of the gas, and add very much to the durability of the retorts, either clay or iron. The Compensator obviates entirely the necessity of water-joints, is compact, durable cleanly, not liable to get out of order, self-acting, quiet, and certain in its operation.

We are also sole proprietors and manufacturers of the

MACKENZIE PATENT BLOWER, PATENT CUPOLA AND SMELTING FURNACE.

The Blower is a Force Blast machine, durably built, and can be driven with one-third the power required to drive the ordinary Fan. The Cupolas are manufactured in sizes to melt from 1 ton to 20 ons per hour, will save one quarter of the time required by the old style Cupola, and 33 per cent. fuel. Address

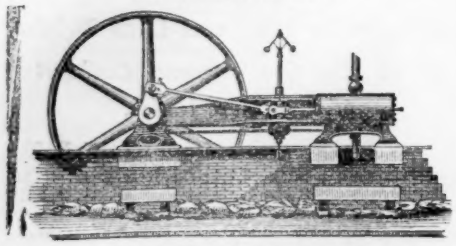
B. KREISCHER., Prest.

JAS. SAYRE, Treas,

CHAS. W. ISBELL, Sec'y Office 484 Broadway, New York.

ERIE BASIN IRON WORKS,

MANUFACTURERS OF



Babcock & Wilcox Patent Variable Cut-off

STATIONARY STEAM ENGINES,

These Engines are conceded to be superior to all others in ECONOMY OF FUEL and REGULARITY OF MOTION and in NON-LIABILITY TO DERANGEMENT; will save from 25 to 50 per cent. over any Engine in this market.

Flue and Tubular Steam Boilers, Tanks, Oil Stills, Mill Work, Machinery, etc., etc.

OFFICE AT THE WORKS ON

Elizabeth, Dwight and Van Dyke Sts.,

SOUTH BROOKLYN

☞ Repairs done on Steamers at short notice.

THE

WASHINGTON MILL

AND

SILVER MINING COMPANY

OF ECHO DISTRICT, HUMBOLDT CO., NEVADA.

Capital Stock $300,000,

Issued for Mining Purposes.

60,000 Shares at Five Dollars each.

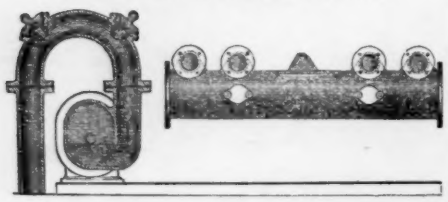
OFFICERS: President.—J. Clements Stocker.
Vice President.— John J. Thomas.
Secretary and Treasurer,—Henry Lee Reynolds.
Superintendent,—William S. Sargent.

TRUSTEES: J. Clements Stocker, New York city.
John J. Thomas, New York city.
Lewis W. Phillips, New York city.
F. Page Davis, Unionville, Nevada.
Henry Lee Reynolds, New York city.

Office of the Company, 30 Pine street, New York.

☞ The mine of this company rapidly approaching that point of development which will necessitate the erection of a Mill, the Trustees are authorized to dispose of 10,000 shares of the reserve capital stock.

STANLEY'S HYDRAULIC GAS MAIN.



WILLIAM TAYLOR & SONS,

COLUMBIAN IRON WORKS,

Nos. 11, 13 & 15 Adams Street, Brooklyn, N. Y.

MANUFACTURERS OF ALL KINDS OF

Castings, Iron Buildings Store Fronts, Columns, Girders and Beams.

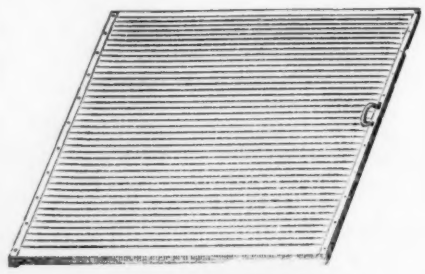
ALSO,

Gas Works Castings of all kinds.

Steam Engines, Mill Gearing, Hydraulic Presses for the manufacture of Linseed and Cotton Seed Oils, Sugar Mills, Single and Double Action Pumps, also Steam Pumps, Coal Oil Machinery, High and Low Pressure Boilers, Tanks, Kettles, Soap Curbs, &c.,

MADE AND REPAIRED AT THE SHORTEST NOTICE.

WM. TAYLOR. JAMES A. TAYLOR. EDWIN S. TAYLOR.



JOHN L. CHEESMAN,

MANUFACTURER OF PATENT CONICALLY SLOTTED SOLID WOOD TRAYS.

Two hundred per cent. cheaper than Iron and will last twice as long.

☞ All persons are cautioned against purchasing of any other person. Orders received by mail, or otherwise. JOHN L. CHEESMAN,
147 and 149 Ave. C., New York City.

BAY STATE FIRE BRICK

—AND—

CLAY RETORT WORKS.

CHELSEA, MASS.

DAVIS & CHADDOCK,

MANUFACTURERS.

Office Nos. 125 and 127 Water-st., Boston.

Also agents for the sale of J.K. BRICK & Co's, Clay Retorts, Fire-Brick, Gas-House tile, etc. 66tf

---

BROOKLYN TUBE WORKS.

B. T. BENTON,

MANUFACTUBER OF

WROUGHT IRON AND GALVANIZED

TUBES,

For Steam, Water, or Gas.

MANUFACTORY AND OFFICE,

Corner John and Adams Street, Brooklyn

ALSO

58 John Street New York. 171

Notice to Companies Operating in Lands, Mines, Railroads, etc.

AN ENGINEER AND GEOLOGIST WHO HAS had long experience in the Coal-fields, Collieries, Furnaces, and various descriptions of Mines, and in building Inclined Planes on prominent Railroads of the country, etc., is prepared for an immediate engagement. Can give suitable references. Address

ENGINEER AND SUPERINTENDENT,
Lock Box 40, Richmond, Va,

OREGON IRON FOUNDRY,

738, 740, 742 and 744,

Greenwich Street, New York.

CASTINGS FOR

GAS WORKS

OF ALL DESCRIPTIONS, INCLUDING

Purifiers, Exhausters, Compensators, Self-Acting Valves, Branches, Bends, &c.

FLOYD'S PATENT

Malleable Iron Retort Lid.

SABATTON'S PATENT

Furnace Door and Frame.

REFERS TO—J. A. Sabattan, Esq., Engineer Manhattan Gas Co—Col. A J. White, Metropolitan Gas Co.—C. C. Mowten, Engineer New-York Gas-light Co.—J. Mowten Saunders, Engineer Baltimore Gas Co.—John T. Harrison, Engineer Savannah Gas Co.

136] HERRING & FLOYD, Proprietors

SILAS C. HERRING. JAMES R. FLOYD

EXTINGUISHER.

ALWAYS READY

FOR INSTANT USE.

Portable Self-Acting Fire Engine.

No Building Safe Without Them.

Price, $45, $50, $55.

☞ Send for Circular.

U. S. FIRE EXTINGUISHER CO.,
184] 8 Dey street, New York.

FOR SALE.

CASTINGS, STATION METER, ETC.—THE Wilmington (Del.) Gas Company having enlarged their works, have the following articles for sale:

Three sections of hydraulic main 15 inches diameter, suitable for three benches of three retorts each, with stand &c., and Dip Pipes of 3 inch diameter.

Four Purifying Boxes 4 by 6 feet, centre seal, and boxes for Condensers to rest on. One large Scrubber 4 feet diameter, 16 feet high. Three 6 inch valves and all the pipes, bends, etc., necessary for the Purifying House and Cellar. Three castings, used for washers, 16 inches diameter, 12 feet high. One Station Meter 4 feet diameter. One Governor and all the valves, pipes and bends necessary to make the connections in Meter House and Cellar.

The above are in good condition and can be seen at the Works. Will be sold low if applied for soon. G. RICHARDSON, Pres. (84-4t

---

MATINEE TO-DAY AT 2 O'CLOCK.

IMPORTANT

TO BOTH OLD AND YOUNG.

PEARSON & CO.'S

CIRCASSIAN HAIR REJUVENATOR,

THE BEST HAIR DRESSING IN THE WORLD,
IS NOW OFFERED TO THE PUBLIC.

In two weeks it restores the hair, at any period of life, to its original color, giving it all its youthful softness and luxuriance.

ITS CLEANSING PROPERTIES ARE TRULY MAGICAL, removing in a few days all scurf or dandruff, all irritation and soreness of of the scalp.

Thousands of testimonials can be furnished by the proprietors.

J. S. PEARSON & CO.,
No. 286 Jay st., Brooklyn.

without whose signature none is genuine.

For sale by all druggists and hair dressers generally. 186-3m

---

Worthington's Steam Pump,

Extensively used by

GAS-LIGHT COMPANIES,

For sale at greatly reduced prices. Also, a new and highly successful Pump, driven by water pressure, requiring no attention or repairs, and the most economical water motor yet constructed.

☞ Patent GATES for Water and Steam-stops.

HENRY R. WORTHINGTON,
61 61 Beekman-st, New York.

NATIONAL FOUNDRY AND PIPE WORKS.

Office and Works—Carroll, Pike, Smallman and Wilkins Streets,

PITTSBURGH, PA.

WM. SMITH,

Manufacturer of all kinds of GAS and WATER PIPE, BRANCHES, CONNECTIONS, T's, ELBOWS, and ALL CASTINGS USED AT GAS AND WATER WORKS.

I offer special inducements to parties wishing to purchase, my Pipe is Smooth, regular in weights, and cast vertically.

N. B.—Pipe from 3-inch and upwards, cast in 12-ft. lengths.

☞ SEND FOR CIRCULAR AND PRICE LIST.
149

FOR SALE

THE VALUABLE IMPROVEMENT FOR SAVING and otherwise improving the gas, invented by Dr. J. S. Wood, described in the "Gas-light Journal" October 2d, 1866, is now for sale by State or County rights.

Address J. S. Wood, Patentee, No. 400 Library Street, Philadelphia, Pa.

WANTED—Second-hand Purifiers about eight feet square—must be in good condition. State particulars and price, and address the GAS-LIGHT JOURNAL, No. 22 Pine street.

H. BROWN'S PATENT
Metal Top Lamp Chimney,
First Quality Extra Annealed Glass.

Will not crack or break from sudden changes of temperature, is readily cleaned, and with ordinary care should last just as long as the lamp on which it is used. To wholesale dealers, there will be a discount on all orders of one gross or over of 20 per cent. One half gross to one, 10 per cent. Orders of less amount, net. My terms are invariably cash with order, or "on delivery."

CHAS. H. REICHMANN, Sole Agent,
189 45 Fulton-street, New York.

F. H. LOVELL & CO.,

Successors to Alfred Bliss & Co.

MANUFACTURER AND JOBBERS OF

KEROSENE

LAMPS

CHANDELIERS,

BRACKETS,

AND

Lamp Trimmings

GENERALLY.

Station, Sugar House, Street and Coal Oil Lanterns.

No. 233 Pearl Street,

159-182 *NEW YORK.*

Illustrated catalogues and price lists furnished on application.

PLASTIC SLATE ROOFING
JOINT STOCK COMPANY.

OFFICE 157 [Room 19] BROADWAY,

New York.

W. C. POTTER, Vice Pres't.
J. M. ALLEN, Sec. and Treas. **LICENSES GRANTED.**

PLASTIC SLATE
FOR
ROOFING & OTHER PURPOSES.

The process of reconstructing Slate Stone from a disintegrated state was

PATENTED FEBRUARY 21st, 1865.

It is a combination of

Pulverized Slate & Viscous Matter,

(the latter possessing qualities of geological and chemical affinity for the former,) and is a development of one of the simple but unalterable tendencies of nature.

As a Roofing Material it Stands Unrivalled.

A mastic—it adapts itself to every shape and slope. Non-combustible, impervious, non-expansive, and undecaying.

Frost does not Crack nor Heat Dissolve it.

The only roofing material ever discovered that will resist the action of the elements as long as the structure it protects. Being susceptible of little, if any wear, from exposure, and

Perfectly Fire-Proof,

It is unequalled as a coating for Railroad and Farm Buildings, Fences, Bridges, bottoms of Vessels, Vaults, etc.

EDDY'S
KEROSENE COOKING AND HEATING Stoves and Ranges.

THESE COOKING STOVES WILL

Bake, Boil, Stew, Fry and Roast

With the greatest economy and facility, and without heating the room in which they are used. They are perfectly simple, operating like an ordinary Kerosene Lamp with a chimney, and are the only kerosene stoves that burn without smoke or odor.

"We have been perfectly astonished to see what a labor-saving, dirt-saving and heat-saving invention is Eddy's Patent Kerosene Stove. Taking the cost of running it, and the result attained, it is the best patent in the market."—[Worcester Daily Spy.

Our heating and cooking stoves are very convenient and economical, especially when a fire is required but a few hours at a time.

Orders for stoves may be sent through the American Advertising Agency, 389 Broadway, New York.

ALEX. M. LESLEY,
Manufacturers, No. 605 Sixth Ave., New York.
Send for Illustrated Circular. (136

KNITTING MACHINES,
FOR
Families and Manufacturer.

Something New and Invaluable for Family Use.

We offer the public the simplest, strongest and best Knitting Machine in the world.

It occupies but little space, is portable, and can be attached to a stand or table; weighs about 40 lbs.

It will knit a variety of stitches, the breakage of needles is trifling, the cost of needles is insignificant, and the most delicate material can be knit pure and spotless as the needles are not oiled.

Orders for Machines may be sent through the
American Advertising Agency,
389 Broadway, N. Y.

Send for a Circular—Agents wanted.

DALTON KNITTING MACHINE CO.,
137] 537 Broadway, N. Y.

WEED'S
HIGHEST PREMIUM
Shuttle Sewing Machine.

Has only to be seen and operated to be appreciated.

Call and see for yourself before purchasing. Please bring samples of various kinds of thread (such as is usually found at stores), and various kinds of fabric, which you know the former most popular sewing machines either cannot work at all, or at best very imperfectly.

SUPERIORITY

over any other machine in the market will be seen at a glance:

1st. It runs easily and rapidly, and is so constructed as to endure all kinds of hard usage.

2d. No breaking of threads in going over seams.

3d. No imperfect action of the feed at uneven places in the work.

4th. The Weed-stitch catches of itself, and will sew from the finest lace to the heaviest leather, and 200 cotton to coarse linen thread.

5th. The Weed Machine will do beautiful quilting on the bare wadding, without using inner lining, thus leaving it soft as if done by hand.

6th. The variety of fancy work that can be done on the

WEED MACHINE,

with so little trouble, make it equal, if not superior, to six machines combined; for instance, it binds, tucks and sews on the band at the same time, and in fact, the

WEED NO. 2 MACHINE,

as before stated, is equivalent to a combination of any six ordinary machines.

Orders for machines may be sent through the American Advertising Agency, 389 Broadway, New York.

Below we give a few prices.

No. 2. Oil Black Walnut, Ornamented with Hemmer.	$60,00
No. 2. Oil Black Walnut, Hall Case, Ornamented, with Hemmer.	65,00
No. 3. Extra Oil-Polished Black Walnut, Half Case, Large Table beautifully Ornamented.	75,00

WEED SEWING MACHINE Co.,
136. 506 Broadway, New York

A YOUNG MAN, LATELY ASSISTANT MANAGER of a Liverpool Gas Works, wishes for a situation. Has no objection to the country. Understands all appertaining to Gas Manufacture, and can draw. Highest references. Apply to Col. ROOME, President Manhattan Gas-Light Co. 185

CATALOGUE of Scientific, Military, Naval and Miscellaneous BOOKS just published, and sen free on application.

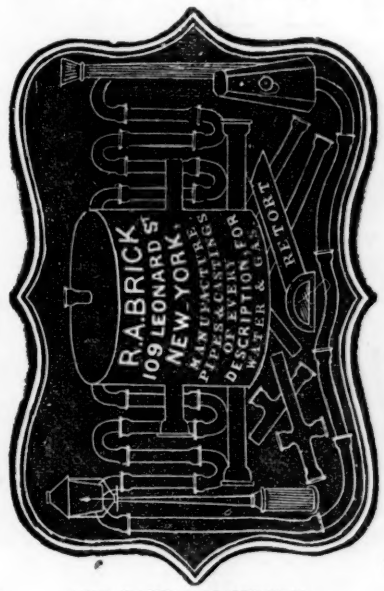
D. VAN NOSTRAND,
PUBLISHER,
163 192 Broadway, New York.

GAS MANIPULATION,
With a Description of the Various INSTRUMENTS and APPARATUS employed in the
ANALYSIS OF COAL and COAL GAS.

By the late HENRY BANISTER. Enlarged by WILLIAM T. SUGG. 2 vol. 8vo. cloth, $7.50.

D. VAN NOSTRAND,
85 Publisher and Importer, 192 Broadway.

DRIVING PIPE,



BERGEN IRON WORKS,

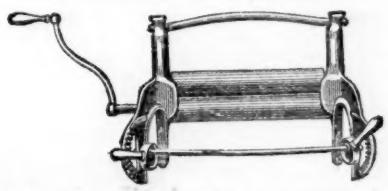
OFFICE 109 LEONARD STREET, NEW YORK.

AND BANDS COMPLETE.

PUTNAM'S CLOTHES WRINGER.

IT IS THE ONLY RELIABLE

Self-Adjusting Wringer.



No Wood-work to Swell or Split. No Thumbscrews to get out of order. Warranted with or without Cog-wheels.

It took the First Premium at Fifty-seven State and County Fairs in 1863, and nearly double that number in 1864, and is, without an exception, the *best* Wringer ever made. Patented in the United States, England, Canada, and Australia. Agents wanted in every town, and in all parts of the world. Energetic agents can make from $3 to $10 per day

WHAT EVERYBODY KNOWS, VIZ.:

That Iron well galvanized *will not rust.*

That a *simple* machine is better than a complicated one.

That a Wringer should be *self-adjusting, durable, and efficient.*

That thumb-screws and fastenings cause *delay* and *trouble* to regulate and keep in order.

That wood soaked in water will *swell, shrink,* and *split.*

That wood-bearings for the shaft to run in *will wear out.*

That the Putnam Wringer, with or without cog wheels, will *not tear the clothes.*

That cog-wheel regulators are not essential.

That the Putnam Wringer has *all* the advantages, and *not one* of the disadvantages above named.

That all who have tried it pronounce it the *best* Wringer ever made.

That it will wring a thread or a bed-quilt *without alteration.*

We might fill the paper with testimonials, but insert only a few to convince the skeptical, if such there be; and we say to all, *test* Putnam's Wringer. Test it *thoroughly* with *any* and any others, and if not entirely satisfactory, return it;

PUTNAM MANUFACTURING CO.—*Gentlemen:* I know from practical experience that iron well galvanized with zinc will not oxydize or rust one particle. The Putnam Wringer is as near perfect as possible, and I can cheerfully recommend it to be the best in use. Respectfully yours,

JOHN W. WHEELER, Cleveland, O.

Many years' experience in the galvanizing business enables me to indorse the above statement in *all particulars.*

JOHN C. LEFFERTS, No. 100 Beekman St.

NEW YORK, *January,* 1864.—We have tested Putnam's Clothes Wringer by practical working, and know that it will do. It is cheap; it is simple; it requires no room, whether at work or at rest; a child can operate it; it does its duty thoroughly; it saves time, and it saves wear and tear. We earnestly advise all who have *much* washing to do, with all intelligent persons who have *any,* to buy this Wringer. It will pay for itself in a year at most. HORACE GREELEY.

PRICES—$8, $9, and $10.

Sample Wringers sent, express paid, on receipt of price.

Manufactured and sold, wholesale and retail, by

PUTNAM MANUF'G CO.,
13 PLATT STREET, New York,
BENNINGTON, Vt.,
CLEVELAND O.

TURNBULL'S
AUTOMATIC PURIFIER.

STATE RIGHTS FOR SALE ON LIBERAL terms. For further information address by letter, WM. C. TURNBULL, care of T. C. Babcock, 59 Broadway, or to the Editors of this Journal.

THE AMERICAN METER CO.

Organized under the General Manufacturing Laws of the State of New York

SAMUEL DOWN, President. HENRY CARTWRIGHT, Vice President. RICHARD MERRIFIELD, Secretary and Treasurer

Trustees.

SAMUEL DOWN. WILLIAM HOPPER, R. H. GRATZ, HENRY CARTWRIGHT, RICHARD MERRIFIELD.

THOMAS C. HOPPER, *Superintendent at Philadelphia.*

This Company is now prepared to furnish WET AND DRY GAS METERS, STATION METERS, GOVERNORS, PRESSURE INDICATORS AND REGISTERS, SERVICE and METER COCKS, and all other articles in their line appertaining to the use of Gas-Works.

The combination of Mechanical and Scientific Skill, and the long experience of the several members of the Company, is a sure guarantee of durability, accuracy and excellence of workmanship. Orders addressed

AMERICAN METER COMPANY,

West Twenty Second Street, New York. Arch and Twenty-Second Streets, Philadelphia. No. 23 West Street, Boston will meet with prompt attention.

Harris & Brother, Practical Gas Meter Manufacturers,

Continue, as heretofore at their old Establishment, No. 1117 CHERRY ST., PHILADELPHIA, to Manufacture

WET AND DRY GAS METERS, and all kinds of GAS APPARATUS, and furnish all articles appertaining to the use of Gas Works. ☞OUR WORK WARRANTED—Satisfaction Guaranteed. Orders respectfully solicted, and promptly attended to, by

HARRIS & BRO., No 1117 Cherry st., Philadelphia.

Messrs. Harris & Brother, Philadelphia Gas Works, February 14, 1857.

Dear Sirs;—I take great pleasure in stating that we have found your meters to register with entire correctness, and to be generally of very good quality—the number furnished by you to these works is over 5,000. John C. Cresson, Engineer;

Office of the Gas Light Company of Augusta, Ga., March 6th, 1858.

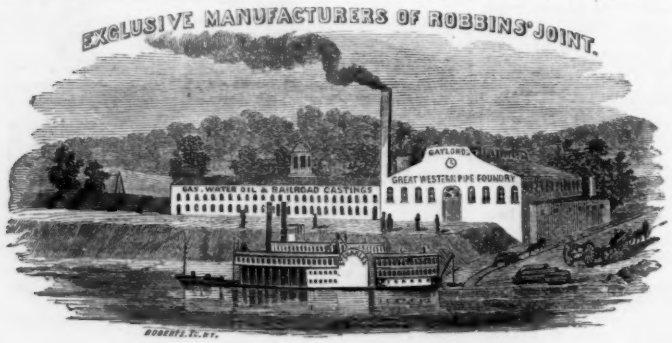
This is to certify that having used meters manufactured by Messrs. Harris & Bro., for the last nine years, we do not hesitate to state they have given entire satisfaction in point of wokmanship and accuracy of registration; they are surpassed by none, and equaled by few manufactories in the Union; we have used meters made by other establishments but our preference is in favor of those made by Harris & Bro., of Philadelphia, Pa.

G. S. Hookey, Superintendent of the Gas Light Company of Augusta, Georgia.

Messrs. Harris & Brother, Philadelphia. Philadelphia, March 4, 1858.

Gentlemen—We take great pleasure in bearing our testimony to the very superior character of the meters we have received from your establishment. We have always found the workmanship all we could desire, while the accuracy and reliability of their measurement have always been satisfactory. We have used meters made by other parties, and none have given as entire satisfaction as those received from you. We are, gentlemen, very truly, yours, Birkinbine & Mears.

Messrs. Harris & Brother. March 14, 1857.



GAYLORD'S
Great Western Pipe Foundry.

EXCLUSIVE MANUFACTURERS OF ROBBINS' JOINT.

Manufacturers of Gas, Water, Oil and Railroad Castings.

T. G. GAYLORD & CO.,

Office Nos. 90 and 92 Broadway,

Cincinnati, Ohio.

T. G. Gaylord,
Wm. Galway,

GROVESTEIN & CO.,
PIANO FORTE MANUFACTURERS,

499 BROADWAY, NEW YORK.

THE ATTENTION of the public and the trade is invited to our New Scale, Seven Octave, Rosewood Piano Fortes, which for volume and purity of tone are unrivalled by any that have hitherto offered in this market. They contain all the modern improvements, French Grand Action, Harp Pedal, Iron Frame, Over-strung Bass, etc., and each instrument, being made under the supervision of Mr. J. H. Grovesteen, who has had a practical experience of over thirty years in their manufacture, is fully warranted in every particular.

THE "GROVESTEEN PIANO-FORTE"
RECEIVED THE HIGHEST PREMIUM AT THE
CELEBRATED WORLD'S FAIR.

Where were exhibited instruments from the best makers of London, Paris, Germany, Philadelphia, Baltimore, Boston, and New York; and also at the American Institute for five successive years, the gold and silver medals from both of which can be seen at our warerooms.

By the introduction o f improvement we make a still more perfect Piano-Forte, and by manufacturing largely, with a strictly cash system, are enabled to offer these instruments at a price which will preclude all competition.

PRICES

No. 1,	Seven Octave,	round corners,	Rosewood, Plain Case,	$300
No. 2,	"	"	" Heavy Moulding	325
No. 3,	"	"	" Louis XIV style	350

a fac-simile of the accompanying cut.

TERMS—Net Cash, in current funds Descriptive on application.

THE AUBIN BALLANCED

VALVE WATER METER,

(Used also for Oils and Liquors)

Is now in use by many City Water Cos., because of its low price, simplicity, durability, accuracy under any pressure, and (a great advantage) because it runs with less head than any meter used. Manufactured by H. Q. HAWLEY, Albany, N. Y.

MORRIS, TASKER & CO,

PASCAL IRON WORKS

[ESTABLISHED 1821,]

PHILADELPHIA,

Manufacture Wrought Iron Welded Tubes for Gas, Steam or Water; Lap-Welded Boiler Flues, GALVANIZED WROUGHT IRON TUBES,

ARTESIAN WELL PIPES,

of Wrought or Cast-Iron, screwed together, flush inside and out; Gas-works Castings, Retorts and Bench Castings for Coal Gas-works,; Cast-Iron Street Mains, Bends, Branches, Drips, &c.

Gas and Steam Fitters' Tools, &c.

Stephen Morris. Stephen P. M. Morris.
Thomas S. Taskar. Henry S. Morris.

Office and Wareroom, 15 Gold-street, New York.

J. VAUGHAN MERRICK, W. H. MERRICK,
JOHN E. COPE.

SOUTHWARK FOUNDRY,

FIFTH & WASHINGTON STREETS,

PHILADELPHIA.

MERRICK & SONS, Engineers,

MANUFACTURERS OF EVERY DESCRIPTION OF GAS MACHINERY.

Retorts, Bench Castings, Condensers, Washers, Scrubbers, Wet or Dry Lime Purifiers, Coke Wagons, Fire Tools, Wrought Iron Grate Bars, Gasholders, either Telescopic or Single, with Suspension Frames complete; Wrought Iron Roof Frames, for Iron or Slate; Stop Cocks, Exhausters, Steam Pumps, Boilers and Tanks, Steam or Hand Air Pumps for proving Street Mains, Centre Seals, Governors, Wrought or Cast-Iron, Line Sieves for Purifiers, Hoisting Machines for Lifting Purifier Covers.

Address— MERRICK & SONS,
5th and Washington Sts, Philadelphia.

S. FULTON & CO.,

(Successors to Colwell & Co.)

Manufacturers of

PIG IRON & CAST IRON GAS & WATER PIPES.

Also, Heavy & Light Castings of every description, No. 207 North Water street and 206 North Wharves, Philadelphia.

SAMUEL FULTON, THEO. TREWENDT

TO GAS COMPANIES.

THE UNDERSIGNED DESIRES TO undertake the supervision of several small Gas-works, to visit and examine them as often as may be necessary; to obtain and inspect their coal, castings, fire-brick, and other materials; and to manage their general business in such a manner that they shall be under such supervision as is now attainable in large works, at much increased cost. Also, to advise as general Consulting Engineer and expert in practical chemistry.

CHAS. M. CRESSON,
Late Asst. Engineer of the Philadelphia Gas-works
417 Walnut st., Philadelphia.

GEO. H. KITCHEN & CO.,

NEW PATENT

GAS APPARATUS

For Country Residences, Public Buildings, &c.,

FROM $300 UPWARDS.

EVERY DESCRIPTION OF GAS FIXTURES.

Gas Fitting in all its branches

561 Broadway,
NEW YORK.

THE WOODWARD
Steam Pump Manufacturing Company,

MNUFACTURERS OF THE WOODWARD PATENT IMPROVED

SAFETY STEAM PUMP,

—Adapted for Mining and Fire Purposes—and

Steam, Water & Gas Fittings of All Kinds.

Also, Wholesale and Retail Dealers in WROUGHT IRON PIPE, BOILER TUBES, etc.,

Woodward Building, 76 and 78 Centre Street,

corner of Worth street, Formerly 77 Beekman Street, *New York.*
53 GEO. M. WOODWARD, Pres't. 64

JOSEPH LENNIG,

1615, 1617, and 1619 Francis St.,

Above Ridge Avenue, Philadelphia, Pa.,

MANUFACTURER OF

Wet and Dry Gas Meters,

STATION, SHOW, & EXPERIMENTAL METERS,

Photometers, Pressure Registers, Indicators, and Gauges, Governors, Meter Provers, Centre Seals, Fluid Gauges, &c.

GAS APPARATUS

Of the most reliable and approved construction manufactured and on hand at the

UNION GAS METER WORKS.

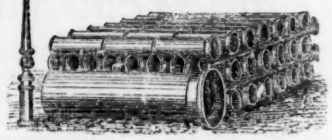
R. D. WOOD & CO.,

MANUFACTURERS OF

CAST-IRON PIPE, RETORTS, &c

Office, 400 Chestnut street,

PHILADELPHIA.



FINKLE & LYON'S

New Family

SEWING MACHINE

Should be known in

IN EVERY TOWN.

To accomplish this at once and save the expense of a *Travelling Agent*, we offer thus, viz:

Any one sending us orders for two machines shall receive one machine free of charge. This proposition cannot avail after we have appointed a local agent in the town.

We have now completed our *new manufacture* at a cost of some $200,000—introducing *new patents*, and such important improvements, that without fear we are able to offer the following stringent guarantee, viz: After a fair trial, if any purchaser does not prefer the FINKLE & LYON FAMILY SEWING MACHINE to any other, he can return it and have back his money.

This machine has taken many of the HIGHEST PRIZES; *is less complicated than any other first class machine; does a wider range of work without changing; requires no taking apart to clean or oil, no "lessons" to set needle, regulate tension or operate machine.*

Our new Manufacturing Machine is sold on the same terms as the Family Machine.

Please send for a circular with samples of sewing.

Finkle & Lyon S. M. Co.
No. 561 BROADWAY, NEW YORK.

Great Impovrement

IN

Sewing Machines.

EMPIRE

SHUTTLE MACHINE!

Patented February 14th, 1860.

Salsroom, 536 Broadway.

This Machine is constructed on entirely new principles of mechanism, possessing many rare and valuable improvements, having been examined by the most profound experts, and pronounced to be SIMPLICITY and PERFECTION COMBINED.

It has a straight needle, perpendicular action, makes the LOCK or SHUTTLE STITCH, which will NEITHER RIP nor RAVEL, and is alike on both sides; performs perfect sewing on every description of material, from Leather to the finest Nansook Muslin, with cotton, linen, or silk thread, from the coarsest to the finest numbers.

Having neither CAM nor COG WHEEL, and the least possible friction, it runs as smooth as glass, and is

Emphatically a Noiseless Machine!

PRICE OF MACHINES,

COMPLETE:

No. 1, Family Machine, with Hemmer, Feller, Gauge, Braider, & Corder, complete. - - - $60
No. 2 Small Manufacturing, with Extension Table, $75
No. 3. Large Manufacturing, with Extension Table, $85
No 3. Large Manufacturing, for Leather, with Rolling Foot and Oil Cup, 100

One-half hour's instructions is sufficient to enable any person to work this Machine to their entire satisfaction.

Agents Wanted in all Towns in the United States, where Agents are not already established. Also, for Cuba, Mexico, Central and South America, to whom a liberal discount will be given Terms, invariably CASH on delivery.

T. J. McARTHUR & CO.,
536 Broadway.

GAS-BURNERS.

WIGHTMAN BROS.,

IMPORTERS AND

SOLE AGENTS

For the United States and Canada, of

SCHWARZ'S

GERMAN LAVA GAS-TIPS

And proprietors of Winchester's Improved

LAVA TIP GAS BURNERS,

No. 25 Kilby Street,

BOSTON, MASS.

T. G. ARNOLD,

MANUFACTURER OF

GAS-BURNERS,

And Importer of SCOTCH TIPS,

336 and 338 West 21st street,

formerly No. 447 BROOME ST., New York.

Mercury Cups, Portable Sockets, Burner Pillars, Burner Pliers, &c., &c.

C. GEFRORER,

Manufacturer of

GAS-BURNERS,

For Lighting and Heating Purposes.

GAS HEATING AND COOKING APPARATUS; FITTERS' ROVING APPARATUS, &c.

529 Commerce st., bet. Market & Arch, Philadelphia

JOSEPH LEES,

Sole Agent for the sale of

Thompson's Gas Controller

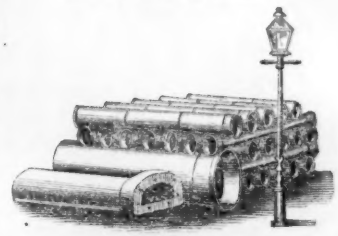
In the States of

CALIFORNIA AND OREGON,

San Francisco, Cal.

LOUISVILLE PIPE WORKS.

Dennis Long, Proprietor.



Cast Iron Gas and Water Pipe of All Sizes Always on Hand.

Retorts.

STOP-VALVES, AND ALL APPURTENANCES FOR EITHER GAS OR WATER WORKS.

All Pipe, &c., Made of the Very Latest Pattern and Improvements.

ALSO MANUFACTURER OF

Steamboat, Portable and Stationery

STEAM ENGINES.

Flour and Saw Mill Machinery—Portable Circular Saw Mills, Shafting, Pulleys, &c., &c.

186-1y DENNIS LONG,
Cor. 9th and Water streets, Louisville, Ky.

EMPIRE LINE

FOR SAVANNAH, GA.

Every Saturday, the elegant Side-Wheel Steamships

SAN SALVADOR,

Commander, Joshua Atkins, and

SAN JACINTO,

Commander, Winslow Loveland.

Every SATURDAY, from pier 13 N. R.

Have been placed on the route to Savannah by the Atlantic Mail Steamship Company of New York, and are intended to be run by them in a manner to meet the first class requirements of the trade. The cabin accommodations of these ships are not excelled by any Steamers on the coast, and although their carrying capacity is large, their draught of water enables them to insure a passage without detention in the river.

San Jacinto,	Saturday,	Oct.	6
San Salvador,	..	"	13
San Jacinto,	..	"	20
San Salvador,	..	"	27
San Jacinto	Saturday,	Nov.	3
San Salvador	..	"	10
San Jacinto	..	"	17
San Salvador,	..	"	24

Returning, leave Savannah every Saturday at 8 o'clock, P. M.

Bills of Lading furnished and signed on the Pier.

For further particulars, engagement of Freight or passage, apply to

GARRISON & ALLEN, Agents,
No. 5 Bowling Green.

Agent at Savannah, B. H. HARDEE.

OPPOSITION LINE.

TO CALIFORNIA VIA NICARAGUA

SAILING EVERY TWENTY DAYS,

with Passengers, Freight, and United States Mails on the following first class Steamships:

On the Atlantic Ocean.	On the Pacific Ocean.
Santiago De Cuba.	America.
San Francisco.	Moses Taylor.
Dakota.	Nevada.

PASSAGE AND FREIGHT AT REDUCED RATES.

Sailing days from New York.

1867.

February 20th, March 10th and 30th.
" April 20th, May 10th and 30th.

And so on at intervals of twenty days, leaving on the Saturday previous, when a regular sailing day comes on Sunday.

For further information, apply at the Company's office, 177 West-st., corner Warren-st., New York.

66tf D. N. CARRINGTON, Agt.

THE PHILOSOPHY OF ANNEALING IRON. Annealed iron may generally be distinguished by its neutral tint. The application of carbon without oxygen, at a white heat, appears to act like a sponge; drawing to the surface and absorbing into itself the chief part of the carbon in the cast iron submitted to the operation. The withdrawal of this impurity changes the iron so treated from a crystalized to a fibrous structure, so that it becomes more or less malleable. Cast iron car wheels are so treated by several manufacturers, to render them tough.

Patterson's Patent Blacksmith's Forge and Improved Conical Tuyere.

We herewith present an illustration of an improvement in forges which is a great advance in the art, and to all practical workers of the "glowing metal" it cannot fail to be appreciated.

Fig. 1 represents the exterior or elevation of the Forge, with handle-door to reservoir, etc.

Fig. 2 is a sectional view of the interior of the Forge. F, represents the earth in the table or top. T, the conical perforated tuyere. H, the handle for operating the tuyere in cleaning or dropping the ashes and cinders into the drum (which can be done in an instant). The arrows indicate the wind blast from the bellows into the reservoir, which supplies the tuyere with a soft blast, giving an intense and even heat.

Fig. 3 the flanging plate (an extra) is for the purpose of making a line fire or circular fire of any size, as indicated by

the holes in the plate. For a line fire, close up all the other holes where the fire is not wanted, and so for a circular or any other shaped fire.

This plate is used when desired on forges No. 4½ and 5, and must be specially ordered when wanted.

Blacksmiths and all others interested in the working of iron, in any of its branches, will understand by an examination, the wonderful simplicity, neatness, compactness and durability of this Forge, which it is claimed must supersede all others in use as soon as it becomes known.

These Forges are composed of a cast iron table and base, connected by a sheet iron body, and exceedingly light and durable, weighing from 60 lbs. for the lightest to 500 lbs. for the highest, and are applicable to all blasts or common bellows.

Each Forge is provided with two Tuyeres of different capacities, which may be changed in a minute from a large to a small fire. These Tuyeres are indestructible by fire. It is clear, compact, easily transported, and may be used with safety in any story of a building, *without brick work*.

The top being filled with earth (E), and not being surrounded by iron or brick, it *cannot* consume the same amount of coal demanded by other forges.

The plate, fig. 3, is especially designed for the use of boiler-makers and work where a large circular fire is required.

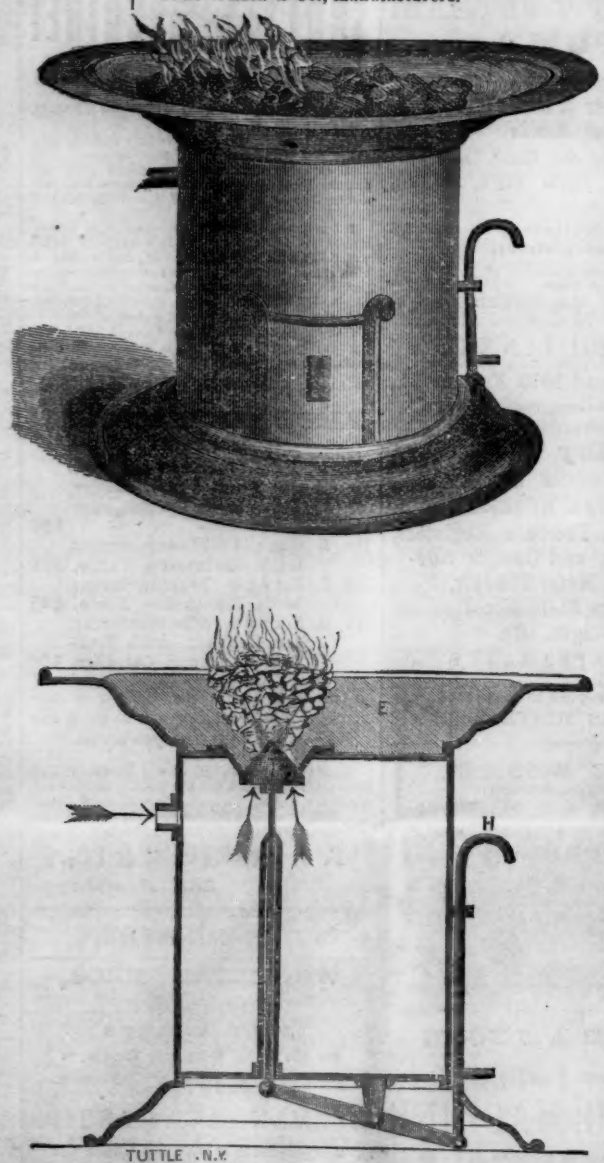
This Forge, the inventor states, will use only one ton of coal per month, running two fires, giving a saving over the old forges of nearly one-half, and that it is safe to say it has one-third advantage in saving coal over the ordinary under blast.

The reason of this saving is because the blast is introduced to the coal in small streams, and fills the cavity above the conical Tuyere with an expanded blast, while the ashes fall below the air-vents by gravity, to be easily and quickly entirely removed by lowering the tuyere by a touch of the simple mechanism at H. In the ordinary way a sharp cutting blast of large diameter eats and tears away the coal before it, without producing adequate results in the heat, and there is no means to equalize and direct the blast, or remove the ashes, and leave the coal free and open to combustion, without frequent stirrings and punchings, which hastens the disintegration and destruction of the fuel.

Coppersmiths, assayers, experimental chemists, etc., will find this forge of great value. It received the first premium at the late Fair of the American Institute.

State rights for sale and patterns will befurnished to manufacture on royalty. Manufactory, corner of South Eleventh and First streets, Williamsburgh, four blocks from Roosevelt and South Seventh street ferries.

J. B. Wilson & Co., manufacturers.



PATTERSON'S PATENT BLACKSMITH'S FORGE AND IMPROVED TUYERE.

Advertising Index.

GAS-BURNERS, APPARATUS, ETC.

American Meter Company, 512 West 22d street, New York... 158
Automatic Gas Purifier—State Rights for sale—Wm. C. Turnbull, care of T. C. Babcock, 59 Broadway, or office of the American Gas-Light Journal..... 157
Castings, Station Meters, &c.—Wilmington (Del.) Gas Company; G. Richardson, President..... 156
Cast Iron Pipes and Fittings—B. S. Benson, 52 East Monument street, Baltimore, Md..... 150
Glycerin for Wet Gas Meters—Hartmann & Laist, Cincinnati, Ohio, or L. Bruckmann, 67 Wall street, New York..... 156
Gasoleine,—J. W. Wheelock, 284 Pearl st., New York..... 154
Gas Cooking Stoves—Dr Musgrave, 158 West Sixth st. Cin., O. 151
Gas Coals—Bird, Perkins & Job, 104 Wall street, New York... 154
Gas Engineers and Contractors—Hoy, Kennedy & Co., 111 Liberty street, New York..... 154
Gas-Burners—C. Gefrorer, 529 Commerce street, Philadelphia, Pa..... 159
Gas Meter Manufacturers—Harris & Bro., 1117 Cherry street, Philadelphia, Pa..... 158
Gas Superintendent—C. M. Cresson, 417 Walnut st., Phil., Pa.. 159
Gas Apparatus, &c.—Geo. H. Kitchen & Co., 561 Broadway.. 159
Gas Burners—Wightman Bros., 25 Kilby st., Boston, Mass.... 159
Gas Burners—T. G. Arnold, 224 and 226 West 21st st., N. Y.. 159
Gas Burners—W. Anderson, cor Franklin & Elm sts., N. Y.... 150
Gas Works Fixtures for Sale—Brookline (Mass.) Gas Co..... 150
Gas Works for Sale—Colonel A. J. Sabbaton, Manhattan Gas Works, N. Y..... 153
Gasworks Apparatus For Sale—Jos. R. Thomas, Wmsburgh Gas Works, N. Y..... 153
Plumbers, Gas and Steam Fitters—Moore & Gaussen, 221 West Fifth street, Cincinnati, O..... 154
Patent Gas Exhauster—Smith & Sayre, 484 Broadway..... 755
Patent Dry Centre Valve—American Meter Company, 512 West 22d street, New York..... 155
Purifying Trays—Jno. L Cheeseman, 147 and 149 Ave. C, N.Y. 156
Retorts, Pipes, &c.—R. D. Wood & Co., 400 Chestnut street Philadelphia..... 159
Street Lamps—J. G. Miner, Morrisania, Westchester Co., N.Y. 151
Solar Gas Machines—Smith & Drake, 726 Broadway..... 151
Wet and Dry Gas Meters, etc.—Joseph Lennig, 1615, 1617 and 1619 Francis street, Philadelphia, Pa..... 159

FOUNDRIES.

Bergen Iron Works—Driving Pipes and Bands—R. A. Brick, 109 Leonard street, N. Y. 157
Columbian Iron Works—Wm. Taylor & Sons, 11, 13 and 15 Adams street, Brooklyn, N. Y... 156
Dealers in Iron, Copper, Brass, etc.—T. Cassidy & Co., corner of Bridge and John streets, Brooklyn, N. Y..... 154
Erie Basin Iron Works—Elizabeth, Dwight and Van Dyke sts., South Brooklyn, N. Y.... ..... 151, 156
Gaylord's Great Western Pipe Foundry—Office 90 and 92 Broadway, Cincinnati, Ohio..... 158
Manufacturing Enamelers—Nessle & Taylor, 97 Water street, Brooklyn, N. Y..... 154
National Foundry and Pipe Works—Wm. Smith, Carroll, Pike, Smallman and Wilkins streets, Pittsburgh, Pa..... 156
Oregon Iron Foundry—Herring & Floyd, 738, 740, 742 and 744 Greenwich street, New York..... 166
Pascal Iron Works—Morris, Tasker & Co., Philadelphia, Pa...159
Situation Wanted as Assistant Manager of Gas Works..... 157
Second-Hand Purifiers Wanted—Apply at office of this paper..156
Southwark Foundry—Merrick & Sons, Fifth and Washington streets, Philadelphia..... 159
Wrought Iron Pipes, etc.—Joseph Nason & Co, 61 Beekman street, New York..... 154

WATER METERS, PUMPS, ETC.

Aubin Water Meter—H. Q. Hawley, Albany, N. Y.....154, 159
Babcock & Wilcox's Stationary Steam Engines..... 134
Davis' Steam Superheating Boiler—Duplex Steam Boiler Mf'g Company, Long Island City, N. Y... 150
Gaylord's Patent Couplings—Gaylord Patent Coupling Co., 31 and 33 Dey street, N. Y.... 150
Putnam's Clothes Wringer—Putnam Mf'g Co., 13 Platt street, New York..... 157
Pat. Lead-Encased Tin Pipes—Colwells, Shaw & Willard, foot of West 27th street, N. Y.... 118
Steam Engines—Wm. Elting, 65 Liberty street, New York.. 154
Steam Pumps—H. R. Worthington, 61 Beekman st. New York.156
Steam Engines and Boilers—John B. Fuller, 47 Dey st., N. Y...150
Water Pipes, etc.—S. Fulton & Co. 207 North Water st Phila...159
Water Closets, etc.—Wm. S. Carr & Co. 149, 151, 153, 155, 157 Centre street, New York..... 154
Water and Sewerage Pipes—Am. Water and Gas Pipe Company northwest corner of Green and Bay sts., Jersey City, N. J...155
Worthington's Water Meters—H. R. Worthington, 61 Beekman street, New York..... 151
Woodward Steam Pump Mf'g Co. 76, 78 Centre st. New York .159

CLAY RETORT WORKS.

Bay State Clay Retort Works, 125, 127 Water st. Boston, Mass.155
Brooklyn Clay Retort Works, Van Dyke st. Brooklyn, N. Y....155
Clay Retorts, Tiles, etc.—J. H. Gautier & Co. Jersey City, N. J.155
Louisville Pipe Works—Dennis Long, Cor. 9th and Water-sts., Louisville, Ky..... 159
Laciede Fire Brick Works, 1007 North Levee, St. Louis, Mo....154
Manhattan Clay Retort Works, 15th st. near Av. C, New York..155
New York " " 56 Goerck street, New York...155
Philadelphia Fire Brick Works, Vine and 23d sts. Philadelphia.155

MINING MACHINERY, ETC.

Broker in Mining Stocks—C. H. Smith 5½ Pine st. New York..154
Industrial Chemistry—Prof. H. Dussaece, New Lebanon, N. Y.151
Mining Engineer—J. H. Tiemann, 240 Pearl st. New York....154
Mining Machinery—A. Hitchcock, 4, 6, Pine st., New York....154
Notice to Mining Companies—Eng. and Supt. Richmond, Va..156
Sodium Amalgam &c.—Prof. Wurtz, 26 Pine st., New York.....154
Washington Mill and Sil. Mining Co. 30 " " 156
School of Mines, Columbia College, East 49th st. " 151

LAMPS, STOVES, PETROLEUM, ETC.

Eddy's Kerosene Cooking Stoves—Alex. M. Lesley, 605 6th av..157
Lamps—F. H. Lovell & Co 238 Pearl street, New York.....157
Paraffine Oil—G. H. Bronson, 182 Maiden Lane New York.....154
Chimney Top—C. H. Reichmann, 45 Fulton st. " 157

MISCELLANEOUS.

Books—D. Van Nostrand, 192 Broadway..... .....154, 157
Cameron Coal Company—42 Broadway.....158
Dalton Knitting Machine Company, 537 Broadway... 157
Empire S. S. Line for Savannah, Garrison & Allen, 5 Bowling Green..... 159
Empire Shuttle Machine—T. J. McArthur, 536 Broadway.....159
Fire Extinguisher—U. S. Fire Extinguisher Co., 8 Dey street.. 156
Finkle & Lyon Sewing Machine Company, 581 Broadway.....159
Hair Rejuvenator—J. S. Pearson & Co., 286 Jay st., Brooklyn.150
Opposition S. S. Line to California—177 West st., cor. Warren..159
Prince's Metallic Paint—D. Sloan & Co. 115 Liberty street....155
Plastic Slate Roofing Co. 157 Broadway.....158
Pianos—Grovestein & Co. 499 Broadway.....158
Roofing Materials—E. Van Orden & Co. 41 Liberty st..... 154
Rubber Goods—O. B. Gray, 201 Broadway.....154
Ventilation—Henry A. Gouge, 254 Broadway.....151
Watches—T. B. Bynner 189 Broadway.....151
Weed Sewing Machine Company, 506 Broadway.....157

THE MINING & PETROLEUM STANDARD AND AMERICAN GAS-LIGHT JOURNAL,

is published at No. 22 Pine Street, opposite the Sub-Treasury Building on the 2d and 16th of every month, and is a recognized official organ of—

LIGHT, HEAT, MINING INTERESTS.
PETROLEUM, WATER-SUPPLY, AND SCIENTIFIC SUBJECTS GENERALLY.

TERMS.

SUBSCRIPTION—Three dollars per annum in advance.

ADVERTISEMENTS.—One dollar per inch in column for each insertion inside. Outside and editorial page $2.00 per inch Large space or long time by special contract. Payable in advance.

☞ No Advertisement less than $2 00.

AGENTS

NEW YORK—AMERICAN NEWS COMPANY, 119 and 121 Nassau street.
BOSTON—S. M. PETTENGILL & Co., No. 6 State Street.
PHILADELPHIA—JOY, COE & Co., No. 441 Chestnut st. cor. 5th.
Germany ... ...B. WESTERMAN & Co., of New York.
Great Britain....TRUBNER & Co., 60 Paternoster Row, London.
France..... } LE JOURNAL DE L'ECLAIRAGE AU GAZ, 25 Boulevard Poissonnière
Brussels, Belgium—HENRI BERGE.

☞ All communications to be addressed to "The Editors," No. 22 Pine Street, New York.

NOV. 26. 1867.